MURPHY CREEK PROJECT

HERITAGE RESOURCE

DETAILED IMPACT ASSESSMENT

Prepared For

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

555 West Hastings Street
Vancouver, British Columbia

by

James Baker

Okanagan College
1000 KLO Road
Kelowna, B.C.

January, 1983

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ADDENDUM

RESPONSE TO COMMENTS OF THE HERITAGE CONSERVATION BRANCH

DATED 6 JANUARY 1984 ON THE FINAL DRAFT REPORT

July 1984

Canadian Cataloguing in Publication Data

Baker, James W. E.

Murphy Creek Project : heritage resource : detailed impact assessment

Includes bibliographical references.
ISBN 0-7726-0076-7

1. Columbia River - Power utilization - Environmental aspects - British Columbia - Kootenay Boundary. 2. Columbia River - Power utilization - Environmental aspects - British Columbia - Central Kootenay. Kootenay Boundary (B.C.) - Antiquities. 4. Cen Kootenay (B.C.) - Antiquities. 5. Historic sit - British Columbia - Kootenay Boundary. 6. Histo sites - British Columbia - Central Kootenay. 7. Murphy Creek Project. I. B.C. Hydro. II. Okanagan College. III. Title.

FC3845.K7A38 1984a 333.91'4 C84-092142-X
F1089.K7B33 1984

B.C. HYDRO

This impact assessment is based on the "Murphy Creek Project Engineering Description" prepared in November 1982. Since that time, ongoing planning and design studies have resulted in some changes that would affect the project description. The principal changes are as follows:

- In-service date has changed from 1993 to 1995.

- Installed capacity has changed from 300 MW to 275 MW.

- Small changes to the design and locations of shoreline protective works.

- Daily reservoir level fluctuations limited to 2.0 m during March, April and May (previously March and April).

The above changes have been incorporated in the report only where they would affect the results of the impact assessment.

MURPHY CREEK PROJECT

Heritage Resource
Detailed Impact Assessment

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SUMMARY

A detailed impact assessment of heritage resources in the proposed Murphy Creek Hydroelectric project on the Columbia River was undertaken by Okanagan College in the summer of 1982. Fifteen heritage sites along the Columbia River between Castlegar and Trail were deemed to be in conflict with the proposed Murphy Creek Project.

The objective of this study was to provide a detailed evaluation of all fifteen sites deemed to be in conflict with the proposed project. The degree of significance of these sites was to be determined and procedures for mitigation, conservation or compensation were to be recommended.

All fifteen sites deemed to be in conflict were subjected to rigorous evaluative testing. As a result of data recovered from this program, four heritage sites meet sufficient criteria of significance to warrant further conservation or mitigation measures being taken. Eleven heritage sites deemed to be in conflict have been shown to have little or no significance, no further conservation or mitigation measures are anticipated for these sites.

It is recommended that mitigation in the form of extensive excavation be implemented at the four heritage sites identified as meeting the requirements of significance.

Compensation opportunities are discussed for aspects of heritage values that might be indirectly effected by development of the proposed Murphy Creek Project.

A program of monitoring construction activities in major land alteration areas of the proposed project is recommended. This latter measure will not be necessary until the start of construction of the proposed project.

1.0 Introduction

British Columbia Hydro and Power Authority proposed to undertake a hydroelectric project on the Columbia River in the Murphy Creek area between Trail and Castlegar (Figure 1-1). The proposed Murphy Creek Project will entail an earth-filled dam which will raise the Columbia River to the 424 m contour level

1.1 Objectives and Scope of Heritage Resources Study

A detailed impact assessment study of the heritage resource base was contracted for in July, 1982 between B.C. Hydro and Okanagan College.

Heritage resources previously identified in the preliminary overview study were selected for evaluative testing in this detailed impact assessment study. Thirty-nine heritage sites were identified in the preliminary overview study, fifteen of these were ultimately subjected to rigorous evaluative testing. The fifteen heritage sites selected for testing were selected primarily for their high probability of being adversely affected by the proposed Murphy Creek Project. The preliminary overview study recommended only six heritage sites of some significance that might undergo further evaluation at this stage of impact assessment. Brian Apland of the Heritage Conservation Branch, Bjorn Simonsen, Heritage Consultant to B.C. Hydro, Neil Nielsen of B.C. Hydro and James Baker viewed the proposed reservoir area subsequent to bank stability studies being done and determined fifteen heritage sites to be in direct conflict with the proposed Murphy Creek Project and should therefore be further evaluated.

The objectives then of this detailed impact assessment study were to carry out evaluative tests at fifteen heritage sites, determine the significance of this resource base, and recommend conservation or mitigation procedures for further heritage work if required.

1.2 Heritage Resource Study Personnel

James Baker of Okanagan College was the director of this impact assessment study with Kevin McAleese as field assistant and Lynn Foster as laboratory assistant. Four experienced archaeology students from Kelowna and two local people from Castlegar with no archaeological experience made up the field crew. Wayne Choquette of Cranbrook was employed on a consulting basis to provide local terrace formation information. Dr. A. H. Stryd of Arcas Heritage Consultants in Kamloops assisted in matters of methodology.

1.3 Heritage Study Duration and Organization

The field work for the detailed impact assessment study for the proposed Murphy Creek Project began 12 July, 1982 and continued through 10 September, 1982 with the entire personnel employed. The laboratory work of analysis and interpretation of recovered materials was conducted at Okanagan College through to 25 October, 1982 by the director and the two assistants.

2.0 Proposed Project

The proposed Murphy Creek Project is located on the Columbia River about 3 km upstream of the city of Trail and 22 km downstream of the confluence of the Columbia and Kootenay Rivers (Figure 2-1). The Murphy Creek Project would raise the Columbia River about 14 m at the project site and flood low terrace land upstream to Castlegar (B.C. Hydro, 1982).

Feasibility studies for the Murphy Creek Project considered three reservoir levels, 424 m, 427 m and 430 m. A reservoir level of 424 m has been recommended for the Murphy Creek development. Murphy 424 would limit flooding and generally have a lesser impact on upstream communities (B.C. Hydro, 1982). The Murphy Creek Project would be designed and operated as a run of the river project. The proposed arrangement (Figure 2-2) shows a rockfill dam with till core in the present river channel. A 5 unit powerhouse would be located on the right bank with a five-bay spillway between the powerhouse and the dam (B.C. Hydro, 1982).

2.1 Project Area Bank Stability

The proposed Murphy Creek Project banks along the reservoir are composed of uniform fine sand capped by a layer of sandy gravel ranging in thickness from 0.5 m to 3.5 m. Coarse gravel, cobbles and boulders exist at the foot of the present Columbia River banks. The slopes of the reservoir banks vary from flat to very steep (B.C. Hydro, 1982).

The shoreline has been studied in order to assess potential unstable land and/or what portions of the shoreline should be protected from erosion. Terrain analysis of these selected areas indicate that the main cause of any shoreline regression would be beaching and sloughing, due to wave action, rather than any deep seated sliding (B.C. Hydro, 1982).

2.2 Ancillary Activities

Ancillary activities unrelated to bank stability will be the relocation of approximately 1 km of highway #3 around project structures. About 5 km of CP rail line will have to be relocated upstream of the proposed dam site in the low lying Birchbank area (B.C. Hydro, 1982).

Land alterations can be expected where materials for concrete aggregate, granular embankment fill, transitions and drains will be obtained from the left bank of the river close to the axis of the structures. Some materials from the excavation for the left abutment seepage cutoff wall would be utilized as well as areas of the terrace further upstream (B.C. Hydro, 1982).

Materials for impervious embankment fill would be obtained from till deposits along the left bank of Murphy Creek approximately 4 km from its confluence with the Columbia River. Materials for cofferdam rockfill, reservoir shoreline protection rockfill and embankment riprap would be obtained from the rock excavation operations (B.C. Hydro, 1982).

The proposed layout and arrangements of the construction areas, work areas and rock spoil areas are shown on Figure 2-2. The location of the temporary construction camp is on the right bank of the Columbia River just upstream of Hanna Creek. The camp is designed for a maximum resident population of 600 (B.C. Hydro, 1982).

2.3 Project Schedule

Construction is proposed to begin in spring, 1988 with relocation of the road, rail and powerlines followed by development of site access, camps and work areas. Excavation for the approach and tailrace channels would start in the summer of 1988 and continue until river diversion in late fall, 1991 (B.C. Hydro, 1982).

Construction of the cellular cofferdam will start in spring, 1989 followed by spillway and powerhouse excavation. Main structure concrete operations would start in spring, 1990. The spillway could be completed for diversion in late fall, 1991. Installation of the turbines would start in fall, 1991 with the first two units on line by October, 1993 (B.C. Hydro, 1982).

Excavation on the left bank for the seepage control wall would commence in fall, 1989 with construction of the wall starting in spring, 1991. The embankment dam would be constructed between the diversion cofferdams during 1992 (B.C. Hydro, 1982).

3.0 Project Area

The general region of the project area is situated within the bounds of map coordinates: 49° 21' North Latitude, and 117° 35' to 117° 47' West Longitude. More specifically the project area covers that part of the Columbia River between Hugh Keenleyside Dam in the north to Hanna Creek in the south to the 424 m level. The physiography, flora, fauna and cultural events of the project area have been reported upon in the overview report (Baker, 1981). A brief summary is provided below.

3.1 Natural and Cultural Aspects

The project area falls within the Columbia Mountains division of the Interior Plateau of British Columbia. The overall topography is characterized by mountainous terrain of high relief with narrow river valleys offering the most suitable terrain for habitation (Baker, 1981).

The project area lies in the transition area between Krajina's (1969) Interior Douglas-fir zone and Interior Western Hemlock zone and contains the representative trees and shrubs of those zones (Baker, 1981).

Faunal resources in the project area include most of the large North American game animals such as deer, elk, sheep, goat and bear. At least three species of salmon; sockeye, spring and coho made annual runs up the Columbia River at least as far as the Arrow Lakes (Baker, 1981).

The study area falls entirely within the boundaries of the former territory of the Lakes Salish, a division of the larger Okanagan linguistic group (Baker, 1981). Turnbull (1977) conducted archaeological investigations in the Arrow Lakes before dam construction on the Columbia River. As a result of his work, he described the Lakes Salish as marginal participants of the Plateau Culture of Western North America (Turnbull, 1977:134).

The Plateau Culture Type describes a semi-sedentary people whose subsistence is based on hunting, fishing and gathering. The Lakes Salish economic activities then would consist of root-digging in the spring, fishing and gathering berries in the summer, hunting in the fall and remaining fairly sedentary in permanent villages in the winter.

The more recent history of the project area began with the fur trade period early in the 19th century. Mining activity flourished in the latter part of the 19th century and early part of the 20th century. Agricultural enterprises began in the early part of the 20th century. Enterprises related to the forest industry form the major resource activity in the project area at present (Baker, 1981).

3.2 Terrace Formation in the Project Area

Choquette (n.d.) says the Columbia River downcut to bedrock in the Selkirk Trench sometime after 10,000 years ago. The erosional terraces in the Selkirk Trench are thus of Holocene age. The Columbia River channel is now bedrock controlled in the Murphy Creek project area and is flanked by alluvial terraces. Three distinctive alluvial accumulations appear to correlate with the later part of the big bend Kootenay River alluvial chronology.

The thick deposit of stratified alluvium on the left bank of the Columbia River near the mouth of Pass Creek is the product of a long period of aggradation. This oxidized Columbia River alluvium should date between ca. 6500 and 1500 years ago and would relate to a moister climate interval (Choquette, n.d.)

Choquette (n.d.) sees a strong resemblance between the sediment sequence of the Brilliant Terrace at the mouth of the Kootenay River and that of Terraces A2 and A3 of the big bend locality of the Kootenay River. Terrace A3 consists of sandy alluvium lacking significant A horizon development which is plastered against the channel margin of Terrace A2 in the big bend locality. A similar sandy alluvium lacking strong horizonation was observed in the Brilliant Terrace, deposited against a higher terrace. This higher terrace at Brilliant contained several A horizons as well as cultural materials buried in its sandy matrix. These are characteristics it has in common with Terrace A2 of the big bend locality. The corner notched projectile points from this terrace suggest a time depth of one to two thousand years, the same as is documented for Terrace A2.

3.3 Implications of Terrace Formation Correlations

The research implications of terrace formation in the project area as outlined by Choquette (n.d.) are included below without further comment.

On the basis of my preliminary examination, the alluvium in the Murphy Creek project area bears strong similarities to that of the Kootenay River big bend locality in horizontal and vertical interrelationships, sediment texture, extent and nature of soil development, and occurrence of cultural materials.

Confirmation of the hypothesized correlation of the alluvial deposits of these two widely separated localities would have important ramifications for regional archaeological and palaeoenvironmental research. If it is demonstrated that similar sediment sequences were deposited at the same time by these two major rivers, a strong case would be made for their palaeohydrologies being responsive to the same palaeoclimatic factors. It would then be possible to eventually reconstruct Holocene palaeoclimatic trends so that a reliable model could be formed for future archaeological investigations in the region. It would also be possible to investigate local and extra-regional departures from the regional model, an endeavour which would be of great value in reconstructing regional prehistory. In addition, the knowledge that the major rivers of the Kootenay Region had similar palaeohydrologies would allow researchers to use encasing sediments of other bedrock controlled stretches of river for gross chronological purposes in the absence of radiocarbon or typological dating.

The association of specific soils with the sediment accumulations offers important promise for temporal studies of soil development. The palaeohydrological information itself is not obtainable by other means and is presently a significant gap in the palaeoenvironmental record. It would certainly help to improve today's woefully short record of flood cycles.

Several hypotheses have been advanced over the years pertaining to the relationships between geological/climatic events and salmon productivity. Two such hypotheses have specific bearing upon the prehistory of the Murphy Creek project vicinity. Chance has proposed that gaps and changes in the archaeological record of the Kettle Falls locality, which ultimately may have resulted in dispersal of entire cultural-linguistic entities, are the result of failures of the salmon runs due to decreased Columbia River discharge. This may account for the post-Shonitkwu population decline which appears to correlate with marked Altithermal entrenchment, but may reflect a restricted perspective with regard to later time periods. An alternate hypothesis presented

in Choquette and Holstine (1980) and Hudson et al (1981) suggests that hiatuses at Kettle Falls (and other fisheries in the middle stretches of salmon streams) may have been the product of increased discharge which rendered such station less effective as fisheries but which made possible the expansion of salmon fisheries further upstream. With decreased discharge, productivity of the river would have decreased and falls in the lower reaches would again have become more effective as fishing stations. However, the carrying capacity of the drainage as a whole would have decreased, forcing the dispersal of some of the resident population or their adaptation to non-riverine resources, or both. According to this model, decreases in discharge would have improved the fishery at Kettle Falls except during the Altithermal when the decrease in discharge coupled with the increase in erosion may have been too drastic. The testing of these hypotheses very obviously depends upon the establishment of an alluvial chronology for the Columbia River.

The archaeological resources of the Murphy Creek project area have the potential to contribute measurably to the above-described realms of knowledge and thus must not be destroyed without adequate salvage data retrieval (Choquette, n.d.).

4.0 Methodology

The basic objective for this detailed impact assessment study was to evaluate fifteen heritage sites that had been identified as being in danger of inundation from the proposed Murphy Creek Project. Survey techniques which usually form a part of a detailed impact assessment study had formed a part of the preliminary overview study and were not required at this stage. The major focus of this study was on evaluative testing at the previously identified heritage sites in conflict with the proposed Murphy Creek Project.

Evaluating testing was conducted using standard excavation and recording procedures. Shovels and trowels were used depending on circumstances, all matrix was screened through 5.0 mm mesh. Test units consisted for the most part of 50 cm x 50 cm squares taken to a depth of at least 50 cm below surface. These test units were established along arbitrary grid lines spaced 5 m, 10 m, 20 m or 25 m apart depending on the size of the site.

At most sites the grid lines were placed at ten metre intervals along an arbitrarily chosen baseline. Test units were excavated 50 cm south by 50 cm east from the stake that marked five metre intervals along the baseline and grid lines.

The number of test units varied depending on the size of the site. Generally a 5% sample was maintained.

All test units were excavated to a depth of at least 50 cm below surface. At some sites the test unit size was increased to achieve a greater depth of excavation. All sites were mapped showing the test units established from arbitrarily selected datum points. Recording and recovery procedures followed standard archaeological practices.

A backhoe was used for sub-surface testing at the largest site recorded in the project area. This site DhQj 1 at Brilliant extends for 200 metres along the north bank of the Kootenay River just upstream of the confluence with the Columbia River. The baseline at this site ran in an east-west direction. Three trenches were excavated in a north-south direction at arbitrary points along the baseline. The trenches were excavated the maximum depth of the Bobcat-backhoe arm, approximately 2 m below surface. Backdirt from these three trenches was screened to recover cultural material.

4.1 Inventory

The preliminary overview study included a sampling strategy using a 50% stratified random quadrat sample for survey in the proposed project area. The rationale and justification for this design has been reported upon in the overview report (Baker, 1981). Subsurface testing was minimal during the previous reconnaissance stage of resource inventory. Fifteen new sites were recorded in the project area on the basis of surface evidence (Baker, 1981).

No historical or architectural heritage sites occur in the study area at the 424 m level or lower. Aspects of historical heritage in the study area are not directly effected by this proposed project.

Site recording practises followed standard procedures as detailed by the Heritage Conservation Branch.

4.2 Site Evaluation

An evaluative testing program was designed for each of the heritage sites that were deemed in conflict with the proposed Murphy Creek Project. Evaluation consisted of an excavation program that would maximize data recovery but protect the integrity of the heritage resource for subsequent procedures that might be developed for the area.

The heritage sites selected for evaluation were determined in conjunction with advice received from Brian Apland, Bjorn Simonsen and Neil Nielson. Apland, Simonsen and Baker looked at heritage significance, while Nielson confirmed conflicts with the proposed Murphy Creek Project.

4.3 Significance Criteria

All heritage sites in the proposed project area that would be effected by the 424 m reservoir level were selected for evaluative testing. The potential significance of these sites varied considerably from site to site.

Three different site types would be subjected to evaluation. These sites consisted of surface evidence of:

1. Cultural Depressions
2. Lithic Scatters
3. Burials

The significance criteria as outlined by the Heritage Conservation Branch consists of varying degrees of:

1. Scientific Significance

   Does the site contain evidence which may substantively enhance understanding of culture history, culture process, or other aspects of local and regional prehistory?

   Does the site contain evidence which may be used for experimentalism aimed at improving archaeological methods and techniques?

   Does the site contain evidence which can make important contributions to paleoenvironmental studies?

   Does the site contain evidence which can contribute to other scientific disciplines such as hydrology, geomorphology, pedology, meteorology, zoology, botany, forensic medicine ... (Heritage Conservation Branch, 1982).

2. Public Significance

   Does the site have potential for public use in an interpretive, educational, or recreational capacity?

   Does the site receive visitation of use by tourists, local residents or school groups?

3. Ethnic Significance

   Does the site or site locality presently have traditional, social or religious importance to a particular group or community?

4. Economic Significance

What value of user-benefits may be placed on the site (Heritage Conservation Branch, 1982)?

The different types of sites selected for evaluative testing might be expected to reveal different degrees of significance when the above criteria are employed.

4.4 Evaluative Testing

The objective of the evaluative testing program is to recover data that address concerns of significance of heritage resources that are in conflict with the proposed Murphy Creek Project. To that end the program must be designed in such a manner that site significance is readily apparent given the data recovered.

To paraphrase Spurling(1978:65) ... any archaeological site, may be significant in that some information of the past may be revealed. Such may well be the case but the degree of significance will be revealed by evaluative testing if specific problems of regional prehistory are addressed beforehand.

In the Murphy Creek Project area evaluative testing for scientific significance should address concerns of:

1. Local chronology
2. House pit construction
3. Lakes Salish demography and morphyology
4. Consideration of presence or absence of microblades and cores
5. Projectile point typology in time and space
6. Subsistence resource exploitation

Given that all sites selected for evaluative testing must fall within the 424 m reservoir level, not all of the archaeological problems of the area may necessarily be addressed.

The methodology employed in this evaluative testing program should allow for enumeration of heritage sites that meet most of the criteria for significance whether they be scientific, public, ethnic or economic.

5.0 Resource Inventory

The results of the random quadrat survey, site file search and information received from local knowledgeable people have been reported upon previously. A total of thirty-nine heritage sites have been recorded in the project area and have been previously described (Baker, 1981).

5.1 Resource Description

Initially, fifteen heritage sites in the project area were selected for intensive evaluation. One site, Robison Burial, was added during the course of the field work at the request of the Heritage Conservation Branch. These sixteen sites are described below.

1. Site: DqQk 1 Hanna Creek

   Location: 49 08 00 N. 117 44 40 W. UTM 462424

   Type: General Activity

   Elevation: 410 m*

The site is located between Castlegar and Trail on the west bank of the Columbia River, below the proposed dam site, but on the terrace where B.C. Hydro proposed to construct a work camp. A total of 91 test units were excavated to a depth of approximately 70 cm below surface. Eight lithic artifacts and seventy-eight flakes were recovered as a result of evaluation procedures (Table 5-1). The Hanna Creek site has been badly disturbed in the past. The site is in a sandy, deflated area that is very subject to wind erosion. The cultural material occurs for the most part from the surface to 40 cm below surface in an unstratified matrix. Due to past disturbances at this site the cultural material cannot be sorted chronologically. Typological divisions may be achieved when the overall regional chronology is better developed. Further work at this site might serve to quantify the data base, but qualitative analysis is doubtful.

* Subsequent survey by B.C. Hydro indicates that this site is located at approximately El. 420 m.

2. Site: DqQk 4 Murphy Creek

Location: 49 09 25 N. 117 42 40 W. UTM 468446

Type: Circular Depressions

Elevations: 410 m*

The site is located between Castlegar and Trail on the west bank of the Columbia River approximately 50 m south of the mouth of Murphy Creek. A total of twelve test units were excavated to an approximate depth of 50 cm below surface. Five of the test units fell within the ill-defined circular depressions, seven test units were excavated systematically on other parts of this low terrace east of the CP Rail tracks. No prehistoric cultural material was encountered in any of the test units. A chemical fertilizer like substance and fragments of plastic bags were recovered at the 30 cm level. This material lends credence to the report of a train derailment in this area in the early 1960's. The lack of other cultural material has led to the conclusion that this must not be considered a heritage site.

3. Site: DiQj 21 Pass Creek

Location: 49 20 02 N. 117 39 50 W. UTM 617645

Type: General Activity

Elevation: 424 m

This site is located on the north bank of the Columbia River, east of Robson and east of Pass Creek. A total of 36 test units were used to systematically evaluate this site. Eight prehistoric artifacts and 85 flakes were recovered in excavation from an area of approximately 5 m by 10 m. The cultural material clustered at depths from the surface to 10 cm below surface and from 20 cm to 40 cm below surface (Table 5-2). The site is perhaps a small campsite or the remnant of a larger activity area that has been eroded away by action of the Columbia River or Pass Creek. Further work at this site should provide both qualitative and quantitative data for refining the regional cultural sequence.

* Subsequent survey by B.C. Hydro indicates that this site is located at approximately El. 420 m.

4. Site: DhQj 1 Brilliant

Location: 49 19 06 N. 117 38 30 W. UTM 533627

Type: General Activity and Burial

Elevation: 424 m

This site is located along the north bank of the Kootenay River just east of the confluence with the Columbia River. The site is by far the largest in the project area. A total of 257 test units were used to evaluate the site. Three trenches excavated by a small backhoe are included in the total.

A total of 125 test units 50 cm by 50 cm were excavated to a depth of 50 cm below surface. Two 1 m x 1 m test units were located close to the extreme eastern edge of the major terrace (155 m east of datum) on a line oriented north-south. The southern unit produced cultural material. The three backhoe test trenches were oriented north-south and located at arbitrary points along the east-west baseline. Trench A was located 131 m east of datum and extended from 2 m to 11 m south. This trench was extremely productive with three burials encountered, 22 artifacts, and numerous flakes were recovered from the screened backdirt (Table 5-3).

Trench B was located 5 m west of datum and extended from 16 m north of the baseline to 18 m south of the baseline. Minimum samples of the backdirt from this trench were screened due to time constraints but numerous flakes and one artifcat was recovered. No burials were encountered.

Trench C was located 65 m west of datum to bisect a small knoll on the terrace. It extended from 12 m north of the baseline to 5 m south of the baseline. Where the trench bisected the knoll, one burial was encountered. Again a small sample of the backdirt was screened with the result that numerous flakes and eight artifacts were recovered.

The backhoe trenches were taken to the greatest depth at the site. As best as can be determined it would appear that in addition to burials at between 80 to 100 cm below surface, there is a cultural component at between 90 to 120 cm below surface.

Shovel tests that were excavated to an average of 50 cm below surface have delineated cultural material over an area of at least 230 m east-west by 70 m north-south. Cultural material appears to cluster in three components between 10 to 30 cm below surface, between 30 to 50 cm below surface and between 90 to 120 cm below surface (Table 5-3) the latter being revealed in the backhoe trenches.

A thorough discussion of the burials is provided by Lynn Foster (n.d.). The incident of burials at this site might be expected to be quite high as two out of three arbitrarily selected test trenches encountered inhumations. Trench C was chosen deliberately to bisect the highest ground in the test area. The possibility of more burials being encountered at this site is quite likely as local people have reported burials periodically eroding from the terrace edge. The burials encountered by this season of evaluative testing were approximately 10 m (Trench A) and 40 m (Trench C) from the terrace edge. It might be assumed that burials will occur closer to the terrace edge in other parts of the site.

5. Site: DhQj 2 Waldie's Island

Location: 49 19 52 N. 117 39 07 W. UTM 526642

Type: Circular Depressions - General Activity

Elevation: 411 m*

This site is located on a small island in the Columbia River known locally as Waldie's Island. Circular depressions occur on the highest part of the island which is approximately 1 km downstream from the confluence of Pass Creek and 2 km upstream from the confluence of the Kootenay River. A total of 121 test units were excavated along four grid lines that arbitrarily divided the island.

Forty-nine 50 cm by 50 cm test units were excavated at 5 m intervals along the grid lines. Eight 50 cm by 50 cm test units were located 1-2 m apart to sample three small depressions. Sixteen 1 m by 1 m test units were located to sample two large depressions and one medium sized depression. None of the test units in the depressions recovered cultural material. The smaller test units were taken to a depth of 70 cm. The larger test units were taken to an average depth of 1.5 m with four 1 m x 1 m test units being taken to a depth of 2.5 m below surface.

* Subsequent survey by B. C. Hydro indicates that this site is located between El. 424 m and El. 426 m.

Only seven 50 cm by 50 cm test units produced cultural material from a buried component on the south side of the island near the main channel of the Columbia River, away from the circular depression area. The matrix of the island for the most part consisted of loose, alluvial sands in five uniform layers. That part of the island that produced cultural material revealed a layer of clay at 35 cm below surface, the cultural material was recovered from between 35 cm and 60 cm below surface (Table 5-4).

No evidence of the locally reported burials was encountered during evaluative testing. Indeed, due to the paucity of cultural material, and the evidence for periodic flooding, it is unlikely that this island was ever a significant occupation area.

6. Site: DhQj 5 Robison Burial

   Location: 49 19 40 N. 117 38 55 W. UTM 529639

   Type: Burial

   Elevation: 434 m

This site which is immediately east of Waldie's Island on the north bank of the Columbia River was added to the evaluative program at the request of Art Charlton and Brian Apland of the Heritage Conservation Branch. Mark Skinner of Simon Fraser University removed a prehistoric burial from the backyard of Mr. and Mrs. Robison (report on file at HCB) in November, 1981.

Six 50 cm by 50 cm test units were located along the terrace edge immediately east of the burial area. The test units were taken to a depth of 1 m below surface into the distinctive matrix of the reported burial. A 1 m x 4 m test trench was used to face the terrace edge to a depth of 1.5 m below surface. No cultural material or burials were encountered in any of the test units.

7. & 8. Sites: DhQj 7, DhQj 9 Gravel Pit

Location: 49 19 15 N. 117 39 07 W. UTM 526632

Type: General Activity

Elevation: 411 m*

These sites are located in north-east Castlegar on terrace remnants of an active gravel quarry on the west bank of the Columbia River 500 m upstream from the confluence of the Kootenay River.

Grid lines were located to sample remnant terrace areas that had not been subject to too much disturbance from gravel quarrying activity. A total of sixteen 50 cm by 50 cm test units and six 1 m x 1 m test units were used to evaluate the remnant terrace. One flake and small amounts of fire-cracked rock were recovered from one of the test units. Quarry activities have rendered these sites useless for acquisition of qualitative and quantitative heritage data.

9. & 10. Sites: DhQj 11, DhQj 12 College Sites

Location: 49 18 13 N. 117 38 40 W. UTM 529615

Type: Circular Depressions - General Activity

Elevation: 410 m*

These sites are located on a large, low terrace just south and west of Selkirk College on the east bank of the Columbia River. A total of thirteen 50 cm by 50 cm test units were established along grid lines outside the circular depressions. Nine 50 cm by 1 m test units were located within two shallow depressions. All units were taken to an approximate depth of 50 cm below surface. No cultural material was encountered in any of the test units. The matrix at these sites is a loose, alluvial sand that is indicative of probable annual flooding of this low terrace prior to regulation of the Columbia and Kootenay Rivers.

* Subsequent survey by B. C. Hydro indicates that these sites are located at approximately El. 420 m.

11. Site: DhQj 25 Waterloo Eddy

Location: 49 15 38 N. 117 38 27 W. UTM 533564

Type: Circular Depression

Elevation: 430 m*

The recorded site location is on the east bank of the Columbia River 4 km south of Castlegar about 200 m south of Waterloo Eddy. Evaluative testing was conducted on a potential site area on a low terrace about 200 m north of Waterloo Eddy. The recorded site lies well above 424 m and evaluative testing was not warranted. In consultation with Brian Apland and Bjorn Simonsen it was agreed the area north of Waterloo Eddy offered good site potential.

A total of fifty-six 50 cm by 50 cm test units were located along grid lines north of Waterloo Eddy. The low terrace, a higher terrace to the east and a small knoll were sampled to a depth of 50 cm below surface. No cultural material was recovered from any of the test units. One hammer stone or maul was found on the surface of the low terrace.

12. Site: DhQj 27 Blagodatnie

Location: 49 13 43 N. 117 39 59 W. UTM 515528

Type: General Activity

Elevation: 424 m

This site is located on the east bank of the Columbia River just north of Champion Creek on the old Doukhobor settlement of Blagodatnie. The site occurs on a low terrace adjacent to the Columbia River and perhaps bordering an old flood channel.

A total of forty-four 50 cm by 50 cm test units were located along arbitrarily established grid lines. Cultural material was encountered in seven of the test units at between 5 cm to 30 cm below surface. The material recovered consisted of a total of nine flakes (Table 5-5) from the zone below the disturbed plow depth.

* Subsequent survey by B. C. Hydro indicates that this site is located at approximately El. 440 m.

13. Site: DhQj 28 Champion Creek

Location: 49 13 00 N. 117 39 12 W. UTM 519514

Type: Circular and Rectangular Depressions

Elevation: 423 m

This site is located on the east bank of the Columbia River at Champion Creek. The site lies on a low terrace on the south side of Champion Creek approximately 200 m east of the confluence with the Columbia on the terrace 3 m above the present creek level.

Three 50 cm by 50 cm test units sampled the terrace area between the small, shallow depressions. Two 1 m by 1 m test units were located in one circular depression and one rectangular depression. The only cultural material encountered were bean cans and beer cans of recent origin. The matrix of the terrace appears to be colluvial deposits of probable recent origin.

14. Site: DhQk 2 Sullivan Creek

Location 49 10 58 N. 117 42 50 W. UTM 499478

Type: Circular and Rectangular Depressions

Elevation: 411 m

This site is located approximately 10 km north of Trail on the west bank of the Columbia River 400 m south of Sullivan Creek. The recorded site area encompasses two localities. One locality is on a low terrace east of the CP rail line, the second locality is on a higher terrace west of the CP rail line.

Five 1 m by 1 m test units were used to sample the two depressions east of the rail line. Fourteen 50 cm by 50 cm test units were used to sample the depressions and intervening areas on the terrace west of the rail line. All test units were excavated to a depth of 60 cm, with no cultural material being encountered. One possible flake was initially recorded from the upper terrace, subsequent analysis has determined it to be natural not cultural.

15. Site: DhQk 4 Jordan Creek

Location: 49 11 50 N. 117 42 08 W. UTM 488493

Type: Circular Depressions

Elevation: 424 m

This site is located on the east bank of the Columbia River approximately 1 km south of Jordan Creek. The site lies along a ridge on what appears to be an old beach line of the Columbia River. Four depressions were recorded in 1980 and a further four were discovered in 1982 north and east of the originals bordering an old flood channel.

A total of six 50 cm by 50 cm test units were used to sample the ridge area between depressions. A 4 m by 1 m trench was used to sample one depression on the ridge. A 4 m by 1 m trench was used to sample one depression near the old flood channel. One small obsidian flake from the test trench in the ridge depression was the only cultural material recovered. Alluvial sands form the matrix at this site.

16. Site: DhQk 5 Old Ferry Slip

Location: 49 19 58 N. 117 40 47 W. UTM 506644

Type: General Activity

Elevation: 422 m

This site is located on the north bank of the Columbia River 250 m west of the Robson Ferry Slip. The site occurs on a low terrace between the highway and the river near what appears to be an old ferry slip or boat landing.

A total of ten 50 cm by 50 cm test units located along arbitrarily established grid lines and four 1 m by 1 m test units were used to sample this site. A buried cultural component was revealed beneath a hardpan clay strata at between 30 cm to 40 cm below surface over an area of approximately 20 cm by 30 cm. Numerous nails, spikes, bolts and metal fragments were recovered in the top 10 cm (Table 5-6). A Mr. G.O. Sullivan of Robson reported the S.S. Elko was built near this site.

5.2 Resource Interpretation

Interpretation of the resource material is somewhat difficult given the small sample of recovered diagnostic material. A reiteration of the cultural sequences in adjacent areas is appropriate.

The work of David Chance in the Kettle Falls area of the Columbia River to the south of the project area is probably most applicable. The cultural sequence as defined at Kettle Falls (Chance and Chance, 1982, 1977) encompasses the past 10,000 years in five named periods.

Briefly, as best as can be extracted from the various publications of Chance and Chance (1982, 1979, 1977) and Chance, Chance and Fagan (1977) the named periods are as follows.

Shonitkwu Period ----- ca.9000 B.P. to 7500 B.P.

This is the earliest cultural period identified at Kettle Falls. The assemblage includes leaf-shaped projectile points, some with stems or notches. Micoblades and cores form a significant part of the assemblage. Heavy net weights are present as are knives and flakes struck from thick blocks of quartzite.

Ksunku Period ----- ca. 4500 B.P. to 3200 B.P.

There is a considerable hiatus between the earliest period and the next named period which may reflect sampling difficulties at Kettle Falls. In any event the Ksunku Period is shown to contain a high frequency of cryptocrystalline contracting stemmed and square stemmed projectile points and a few cobble cutting tools.

Takumakst Period ----- ca. 2200 B.P. to 1200 B.P.

Again there is a hiatus between this and the foregoing period that may also reflect sampling difficulties. The Takumakst Period as identified at Kettle Falls is characterized by a low level of skill in stone tool technology as a whole and by a quartzite technology in many ways gross or clumsy .... (Chance and Chance, 1982:425). Projectile points are middle sized corner-notched styles with some leaf-shaped and stemmed styles occuring at the lower levels.

Sinaikst Period ----- ca. 1200 B.P. to 500 B.P.

This period is characterized by the occupation of deep house pits. The projectile point styles are a variety of small corner-notched types with some small-side notched and large triangular forms without notches.

Shwayip Period ----- ca. 500 B.P. to 150 B.P.

In this period the small, thin and carefully made side-notched projectile point is completely dominant (Chance and Chance, 1982:427). Miniature quartzite knives appear in significant quantity.

The recent work at the Vallican site in the Slocan Valley to the east of the project area has led to the development of three named phases (Rousseau, 1982).

Winlaw Phase ----- ca. 4500 B.P. to 2500 B.P.

This phase is marked by the presence of distinctive large and medium-sized, foliate, lanceolate, shouldered, stemmed or basally 'eared' projectile points (Rousseau, 1982:12). Large, circular, flat-bottomed pithouses and large 'key-shaped' perforating/scraping combination tools are characteristic.

Vallican Phase ----- ca. 2400 B.P. to 1200 B.P.

This phase is marked by the predominant appearance of large and medium-sized, corner and basally-notched projectile points. Relatively small, circular, deep, steep-walled, depressed floor pithouses are characteristic.

Slocan Phase ----- ca. 1200 B.P. to 150 B.P.

The small, side-notched arrowpoint and large, flat-bottomed, circular and square house depressions with side entrances mark this phase. An assortment of small scrapers and piercing tools are also characteristic.

The pioneering work of Turnbull in the Arrow Lakes immediately west of the project area led to the identification of one phase and one period (Turnbull, 1977).

Deer Park Phase ----- ca. 3300 B.P. to 1700 B.P.

The basic assemblage of the Deer Park Phase includes: projectile points of several varieties, among which corner notched, parallel stem, expanding stem, and lanceolate are the most popular ... Large numbers of circular saucer-shaped and steep-walled pit-houses are associated.

Late Plateau Period ----- ca. 1700 B.P. to 150 B.P.

The primary artifact forms identified as "late" are the Columbia Valley Corner Notched (group 8) and the majority of the small side-notched (group 10) projectile points (Turnbull, 1977:110). Late period sites are associated with burials and camps.

More recent work on the Columbia Piver southwest of the project area by Leeds, Dancey and Jermann (1981) has led to the development of a seven period chronology based on radio-carbon dates and projectile point typology.

Period I ----- ca. 7000 B.P. to 4500 B.P.

Characterized by leaf shaped or lanceolate forms that vary from long, narrow, bipointed to almost oval or almond shaped.

Period II ----- ca. 4500 B.P. to 3500 B.P.

Characterized by less frequencies of lanceolate forms and the appearance of stemmed forms and large, side-notched forms.

Period III----- ca. 3500 B.P. to 2500 B.P.

Characterized by the appearance and prevalance of two stemmed forms, the rudimentary corner-notched points and the contracting-stemmed points.

Period IV ----- ca. 2500 B.P. to 1600 B.P.

Characterized by broad, percussion flaked, corner-notched forms.

Period V ----- ca. 1600 B.P. to 1000 B.P.

Distinguished by the appearance of basally notched to corner-notched medium sized points, and rather crude, small, side-notched points.

Period VI ----- ca. 1000 B.P. to 350 B.P.

Characterized by the appearance of small, triangular, well made, side-notched points.

Period VII ----- ca. 350 B.P. to 150 B.P.

The final demarcation is arbitrary. The size, shape, and notching characteristics of projectile points are much the same as at Kettle Falls.

Of their chronology the authors state:

..... it must be stressed that the chronology developed... is purely methodological. It is not designed to reflect change in any aspect of the cultural system other than the stylistic characteristics of projectile points .... while the chronology presented here may reflect change in population numbers or land use patterns, such change cannot be demonstrated through stylistic analysis alone, and the purpose of the scale is simply to estimate the time depth of cultural resources .....
(Leeds, Dancey and Jermann, 1981:277).

The most frequent diagnostic artifact recovered during evaluative testing in the Murphy Creek project area is the projectile point. Although the sample is small some comparisons can be made.

5.3 Project Area Projectile Point Interpretation

The projectile points recovered during evaluative testing are described below and are integrated into sequences described for areas adjacent to the proposed Murphy Creek Project area.

1. Site: DiQj 21 Pass Creek

Four virtually complete points and three fragments represent the sample from this site. Little can be said of the fragments other than that they might represent parts of medium sized corner-notched points. The four complete points are somewhat of an anomaly in that they represent a type little described in the literature. They are small, thin, triangular unnotched points with slightly convex edges and concave bases (Figure 5-1). Chance and Chance (1982:397, Fig. 180b) illustrate a similar point dated to the late Shonitkwu. Rousseau (1982:40, Fig. 12 a and d:163, Fig. 19 aa) illustrates three very similar types from Vallican but calls them simply point preforms. Turnbull recovered nothing similar nor did Leeds, et al. These may indeed be point preforms that lack notches (Rousseau, pers. com.) but none of this form with notches occur in the Plateau. Further work at this small site should improve the data base.

2. Site: DhQj 1 Brilliant

Nine complete projectile points and two point bases represent the sample from this site (Figure 5-2). The contracting stemmed, foilate and shouldered forms are comparable to types illustrated in Chance and Chance (1982) dated to the Ksunku Period. Rousseau (1982) shows nothing similar. Turnbull's group 1 and group 2 (1977:264) types for the Deer Park Phase are comparable. Leeds et al (1981) Cluster H & K dated to Periods I and II are comparable.

The broad, medium-sized, side and corner notched types from the project area are similar to Takumakst Period points at Kettle Falls the Vallican Phase points in the Slocan Valley, group 5 of Turnbull's Deer Park Phase and Periods III and IV of Leeds, Dancey and Jermann (1981).

The small side notched points from DhQj 1 represent the later phases or periods of all of the previously discussed sequences.

3. Site: DhQj 2 Waldie's Island

The single diagnostic point type from this site (Fig. 5-3) is comparable to the later period points from all of the adjacent area. The quartzite knives are relatively undiagnostic, but are probably also late.

4. Site: DhQk 5 Ferry Slip

The two projectile points from this site (Figure 5-4) are not complete but are probably of the broad triangular corner notched form. They are probably comparable to the Takumakst Period of Kettle Falls, the Vallican Phase in the Slocan Valley, Deer Park Phase of the Arrow Lakes and Periods III and IV of the Chief Joseph Reservoir. Not illustrated but also recovered from this site is a quartz crystal microblade core. Microblade cores occur in the Shonitkwu Period and Pre-Ksunku Time range at Kettle Falls (Chance and Chance, 1982:384, 397). Turnbull (1977:107-8) says they may occur prior to the Deer Park Phase and possibly in the Deer Park Phase. Microblades and cores would appear to have considerable antiquity in the project area.

5. Site: DgQk 1 Hanna Creek

One tip fragment, one base fragment and two complete projectile points represent the sample from this site (Figure 5-5). The base fragment and two complete points are comparable to those of the Ksunku Period at Kettle Falls, group 1 types of the Arrow Lakes and Periods I and II of the Chief Joseph Reservoir area.

6.0 Resource Evaluation

The evaluation testing program has shown that a number of recorded heritage sites in the Murphy Creek Project area should not be further included in conservation or mitigation management decisions. Sites that should not be further considered produced no diagnostic cultural material or no cultural material at all. The reasons for negative results may be that the evaluative sample was too small or as in the case of DhQj 7 and 9, gravel quarrying activities has destroyed previously recorded sites or subsequent erosion as might have occurred at DhQj 2 has removed cultural material.

Four heritage sites in the proposed project area have produced sufficient cultural material to warrant conservation or other mitigative procedures. The reasons for this assessment are provided below.

6.1 Site Specific Assessments - Negative

The sites that should probably not be considered further and the reasons therefore will be discussed first.

1. Site: DqQk 4 Murphy Creek

The Murphy Creek site was recorded on the basis of surface features in the form of faint outlines of two circular depressions. Subsequent subsurface testing produced no cultural material, nor any evidence that the circular depressions had been habitations. If this had at one time been an occupation area, there is now not sufficient material to warrant further work on the basis of any of the criteria of significance.

2. Site: DhQj 2 Waldie's Island

This site was recorded on the basis of surface evidence of well defined circular depressions and local reports of burials. Major subsurface testing was conducted at this site within the depressions, and in areas outside the depressions. No evidence was recovered in or around the depressions to show that the depressions are a result of cultural activity. An explanation for the occurrence of these depressions cannot be offered. Conversations with geologists and geographers at Okanagan College have not been fruitful in arriving at an explanation due to natural causes. Local knowledgeable people report that prior to

regulation of the Columbia River, this small island was subject to periodic inundation. Such occurrences would probably preclude this area from being a major habitation site in the past. The depressions that occur might be the result of recent activities associated with prospecting for placer gold, indiscriminate excavation in search of reported burials, or associated with reported Boy Scout camping activities. No cultural material was recovered that would provide evidence for any of the above.

There does appear to be a buried cultural component at 40-80 cm below surface (Table 5-4) in the southwest part of the island. In terms of management expediency other sites of less difficult access should provide the same data. That is DiQj 21 and DhQk 5 described below, would likely provide the same data in a more cost efficient manner.

No evidence of burials was recovered during evaluative testing at this site. The reports of burials on the island may have been an error in placing the exact location as burials do occur along the riverbank immediately to the east of the island at DhQj 5.

3. Site: DhQj 5 Robison Burial

This site was first recorded as a general activity site and subsequently updated with burial data when a single inhumation was exposed in 1981. Evaluative testing was conducted at this site on the request of the Heritage Conservation Branch. No further burial material was recovered, nor was cultural material recovered from areas adjacent to the burial site. This site is well above the 424 m contour level and is in an area of stable riverbanks.

4. & 5. Sites: DhQj 9 Gravel Pit

These sites were recorded as general activity sites on remnant terraces in an area of active gravel extraction operation. No surface evidence of heritage material was obtained in 1982. Subsurface testing on parts of remnant terraces near the recorded site locations produced one flake as the total assemblage for these sites. The conclusion reached from this result is that these sites no longer exist because of the gravel quarrying operation.

6. & 7. Sites: DhQj 11, DhQj 12 College Sites

These sites were recorded on the basis of surface evidence of circular depressions. Subsurface testing within two depressions and testing between the depressions produced no evidence of cultural activity. These depressions are on a low terrace that prior to regulation of the Columbia River was subject to periodic inundation. One possible explanation for these depressions, given their proximity to a Doukhobor Village, is that tree stumps may have been removed to process for resin which apparently was a Doukhobor practise (Apland, per. com.). Alternately, perhaps some aspect of hydrology can explain their formation.

8. Site: DhQj 25 Waterloo Eddy

Evaluative testing was conducted on terraces north of the recorded site in areas thought to have high site potential. One surface find of a hammer stone or maul constitutes the entire assemblage from this area. If a site does exist in this area it must of necessity be so minimal as to be of little or no significance.

9. Site: DhQj 27 Blagodatnie

This site was recorded as a general activity area on the basis of surface evidence in the form of platey quartzite knife or scraper fragments. Subsurface testing led to the recovery of nine flakes. Little significance criteria can be applied to this site.

10. Site: DhQj 28 Champion Creek

This site was recorded on the basis of surface evidence of two circular depressions and one rectangular depression. Subsurface testing in one depression of each type and outside the depression area produced metal cans of recent origin. The terrace matrix of colluvial deposits are probably recent. No criteria of significance applies here, as evidence recovered indicate very recent activity.

11. Site: DhQk 2 Sullivan Creek

This site was recorded in two localities on the basis of surface evidence of circular depressions. Subsurface testing at the upper locality in 1980 produced no cultural material. Subsurface testing during the 1982 evaluative program, sampled both localities. No cultural material was recovered from this site. No criteria of significance applies here.

Relocation of the rail line could lead to considerable land alteration in this area. The Heritage Conservation Branch might wish to monitor relocation activities.

12. Site: DhQk 4 Jordan Creek

This site was recorded on the basis of surface evidence of circular depressions. Subsurface testing in three depressions and areas outside the depressions produced one obsidian flake. No evidence of cultural activity was determined for the depressions. This site also occurs in two localities approximately 120 m apart. Certainly the site configuration appears to be cultural, but the lack of cultural material from the test sample places this site extremely low in the application of significance criteria.

6.2 Site Specific Assessments - Positive

The following four sites are deemed to meet sufficient criteria of significance to warrant conservation or mitigation procedures. Specific recommendations for continuing work are outlined in another section of this report.

Briefly, aspects of significance that are reflected in a positive manner at these sites include:

- internal stratification and depth
- chronologically sensitive cultural items
- material for absolute dating
- quantity and variety of tool types
- cultural features such as burials
- exotic cultural items
- condition of the site
- data recovery experiments
- sampling experiments

- intrasite spatial analysis
- data contributing to forensic medicine
- accessibility to the public
- local community recognition

Not all of these criteria are manifest at all of the sites described below, but each site certainly approaches a high level of significance.

1. Site: DqQk 1 Hanna Creek

This site is located on a badly disturbed, deflated terrace (Figure 6-1) and would not meet the criterion of significance for site integrity. None-the-less the extent of the site is considerable (300 m N/S by 50 m E/W) and significant data could at least be quantified with a major recovery program. Projectile point types recovered in evaluative testing indicate a fairly early time of occupation for this site. The cultural material is in a fairly discrete, sandy, matrix that overlies bedrock in a uniform thickness of approximately 60 cm.

As this site has been subjected to wind erosion there is a great possibility the cultural material will be badly mixed. Typological sorting should be possible with a large enough sample. The Ksunku Period (ca. 4500 B.P. - 3200 B.P.) to which the Hanna Creek projectile points affiliate typologically, is not at all well represented at Kettle Falls. If DqQk 1 is indeed a manifestation of the Ksunku Period it has the potential of contributing very significantly to scientific knowledge.

2. Site: DiQj 21 Pass Creek

This is a small, possibly remnant site area that is all that remains of a larger site previously eroded by the Columbia River and Pass Creek (Figure 6-2). The cultural material is in an undisturbed, sandy, matrix that overlies river cobbles in a uniform thickness of approximately 50 cm.

The projectile point forms recovered here are not at all well described in the literature for adjacent areas. Chance and Chance (1982) illustrate one similar attributed to the Shonitkwu Period (ca. 9000 B.P. to 7500 B.P.) while Rousseau (1982) dismisses this type as a preform. A larger sample from this site might lead to the definition of a new type for the area, or might provide further information on stone tool technology. In either case contribution to scientific knowledge will be significant.

3. Site: DhQj 1 Brilliant

This large site has been subject to disturbance by farming activities but is still in a good state of preservation (Figure 6-3). The test sample at DhQj 1 has yielded information that shows occupation of the area from at least 4500 years ago to the present. The cultural material is in a relatively undisturbed, sandy, matrix that unconformably overlies river cobbles to a depth of 150 cm. The potential for qualitative and quantitative data spanning a long period of time is great at this site.

In addition to the above, DhQj 1 evaluative testing recovered burials in two different localities. Columbia Plateau burials have been fairly well described (Sprague and Birkby, 1970; Sprague, 1968; 1967; Sanger, 1968) but the potential for expansion of that data from this site is very high. The burials so far recovered indicate a recent date, but the possibility exists that earlier material could be encountered. The burials recovered from Vallican (Mohs, n.d.) have not been fully reported upon, but DhQj 1 provides an excellent opportunity for comparison.

The burial material recovered during evaluative testing was analyzed by Lynn Foster. A summary of her report is included here.

Four burials were encountered at DhQj 1 in which at least five individuals are represented. Burial #3 was left *in situ* due to time limitations.

The skeletal remains of three males, ranging in age from approximately 15 to 19 years were recovered from Trench A in fairly close proximity. A female individual of approximately 21 years

of age was removed from Trench C. The discovery of these burials, together with local residents' accounts of extensive collecting of skeletal material and associated artifacts over the years indicate that this area was used extensively as a burial ground by native people.

Results of radiocarbon samples submitted from Burials #1, 3 and 5 are not available as yet, therefore a definite date for the burials cannot be given. The nature of the associated artifacts, however, suggests a post-contact time period. In addition, the manner of interment reveals similarities with other Plateau burials during the Kamloops phase. According to Sanger (1968, 147-8), the Kamloops phase lasted from 700 B.P. to 150 B.P. and was characterized by primary pit burials accompanied by artifact inclusions and interred in sandy soil, and the probably more recent cist burial with a cairn of rocks above the grave. Richards and Rousseau (1982, 143) have recently extended the temporal span of the Kamloops phase from about 1200 B.P. to 200 B.P. They add that burials attributable to this phase usually contain one tightly flexed individual, are located in sandy matricies on terrace edges, and not all are accompanied by grave inclusions, indicating differences in wealth/status.

The cause of death of the individuals from DhQj 1 is not apparent from the skeletal remains. As well, there are no indications of pre-mortem trauma (ie - healed fractures). The youthful ages of these individuals leads one to speculate that disease was the likely cause of death. Turnbull (1977) reports a smallpox epidemic in the 1780's in the Arrow Lakes area and it is quite conceivable that the epidemic spread to the area of the Brilliant site (DhQj 1). Rousseau (1978, 31) notes that other common causes of death were diseases such as measles, whooping cough and chicken pox, as native people had no immunity to these diseases upon the arrival of European settlers.

The remains of the four individuals recovered from DhQj 1 are presently located at the archaeology lab at Okanagan College. It has been proposed that these burials be re-interred at a higher elevation at the Brilliant site at some future date (Foster, n.d.).

4. Site: DhQk 5 Ferry Slip

This small site is possibly all that remains of a larger site area (Figure 6-4). A cultural component approximately 40 cm below surface is preserved from erosion due to the fact that it is

beneath a clay hardpan layer. The material cultural is in an undisturbed, sandy matrix of approximately 30 cm thickness.

Projectile point types recovered in the test sample appear comparable to types found in the area dated ca. 2500 B.P. One quartz crystal microblade core was recovered during test evaluation. The position of microblades and cores in the regional sequence is somewhat ambiguous. Turnbull (1977) says they are probably early, but might also occur later. Chance and Chance (1982) see no evidence for microblades or cores after 6000 years ago. A larger sample from this site might serve to resolve the problem.

7.0 Impact Identification and Assessment

The major impact on heritage resources as a result of the proposed Murphy Creek Project will be inundation. Inundation alone need not necessarily adversely effect heritage resources if the amount of covering water does not fluctuate. Post-inundation studies of heritage resources show adverse effects come with:

- wave action
- annual reservoir level fluctuation
- currents (vertical, horizontal and return)
- seiches
- uncontrolled runoff and drainage
- the abrasive action of streams and ice
- redeposition of sand and silt (Mohs, 1977:24)

The destructive effects of the above activities are determined by the location of the heritage resource with respect to the reservoir level. Post-inundation studies have characterized reservoirs as having three zones catagorized as:

- The Active Zone
- The Transitional Zone
- The Static Zone

In his post-inundation study of the Arrow Lakes, Mohs says:

> Dynamic processes effecting archaeological sites are most destructive in the Active Zone. Waves, currents, seiches, ice movement, chemical processes, leaching and other dynamic processes are more active in this zone than in the transitional and Static Zones. Currents and sedimentation are the principal processes effecting archaeological sites in the Transitional Zone. Biochemical processes are reduced and erosion is not as extensive as in the Active Zone. Chemical processes predominate in the Static Zone but their effect is negligible when compared with either the Active or Transitional Zone. Archaeological sites located in the Static Zone have the best chance of preservation (Mohs, 1977:37).

The proposed Murphy Creek Project reservoir level of 424 m will have the least impact of those considered (427 m, 430 m). Only three sites of significance, DiQj 21, DhQj 1 and DhQk 5 are in danger of inundation, and they would be located within the Active Zone of the proposed reservoir.

Ancillary activities such as road and railroad relocation, road construction, camp construction and borrow activities, as well as bank stabilization activities might still be considered areas of uncertainty regarding definite site conflicts. No conflicts are anticipated where these activities are tentatively outlined except in the case of DgQk 1 which would be in direct conflict with the construction camp located downstream from the dam site (Figure 2-2).

No heritage resources have been adversely effected by the project exploration, engineering or other feasibility studies to date.

7.1 Schedule of Impacts

Spring of 1988 is the proposed date of road and rail line relocation. Major land alterations can be expected from these activities.

Spring of 1988 is also the proposed start date of camp construction. One significant site, DgQk 1 is in direct conflict with this proposed activity (Figure 2-2).

Fall of 1991 would appear to be when the proposed Murphy Creek Project reservoir would begin to fill. Significant sites, DiQj 21, DhQj 1 and DhQk 5 would be adversely effected by inundation when the reservoir is at the full supply level.

The nature of the location of these sites makes it extremely unlikely that any other development project would be the cause of heritage resource loss.

No Municipality or Regional District would likely allow subdivision of potentially unstable or low elevation areas. Gravel extraction activity is a potential danger to some of the sites but current operations in the area seem capable of supplying the market for some considerable time. Forestry and mining activities do not constitute a danger.

Rejuvenation and replanting of the orchard at Brilliant might be a possibility, but the impact on DhQj 1 would be minimal to moderate.

8.0 Discussion of Research

This detailed impact assessment study focused on sixteen of thirty-nine recorded heritage sites in the project area. The preliminary overview study included a stratified random quadrat survey over 50% of the area. Selected quadrats from this survey led to the identification of fourteen heritage sites. A further twelve sites were predicted for the project area. Twenty-six to thirty heritage sites are a likely number for the project area. Sites that had been previously recorded mostly occurred in quadrats not selected for survey and numbered twenty-five. Differences between investigator's criteria for recording a site could account for the discrepancy in the number predicted and the number recorded outside the selected quadrats.

In any event, all recorded heritage sites deemed in potential conflict with activities related to the Murphy Creek Project have undergone evaluative testing. Heritage sites that have not received evaluative testing occur at elevations well above the 424 m level. Some previously recorded heritage sites that might have been effected by the 424 m reservoir level could not be relocated.

8.1 Suitability and Reliability of Testing Program

All heritage sites selected for evaluative testing received equal attention in terms of evaluative techniques employed. Grid lines were determined arbitrarily and test units were established at ten metre intervals in a grid pattern. If excavation did not result in the recovery of cultural material, five metre intervals were employed to establish grid units. The grid units were expanded to encompass a greater area or diverse areas of site potential. All test units were excavated to at least a depth of 50 cm. Test units were selected at random and increased in size to achieve a greater depth at all sites evaluated.

The reliability of the testing procedures is reflected in the results.

The least number of test units employed was at DhQk 5 where ten 50 by 50 cm units were initially established. One of these was increased to 1 x 1 m to achieve greater depth. Cultural

material was encountered in this unit beneath a hardpan layer. All other sites selected for evaluation received a similar or greater level of testing. When cultural material was not encountered at a site the sample was always increased until cultural material was encountered or until negative results from a large sample precluded any expectation of a significant site being encountered.

8.2 Research Goals

Appropriate research goals can be readily developed around problems that exist in local and regional cultural history. Major questions that require answers are:

1. What is the position of the microblade tradition in regional prehistory?

2. What is the subsistence activity conducted at low elevation heritage sites?

3. Can burial data provide answers to local morphology and demography?

4. Will burial data contribute to forensic medicine studies?

5. Will quantified data clarify local and regional chronologies?

6. What contribution to public awareness of heritage resources would a research program develop?

7. What are the ethnic perceptions of land use and settlement in the region?

The four sites that as a result of evaluative testing are deemed significant, are so considered for the answers they should provide. Research goals might be expanded to include consideration of heritage sites above the 424 m level, but they would be outside the purview of this study. The same holds true for research objectives generated from heritage resources in the study area that are not irretrievably lost through development of the proposed project. Aspects of the fur trade period, pioneer settlement and Doukhobor settlement in the area would not be directly effected by the 424 m level of the proposed Murphy Creek Project.

9.0 Impact Management Discussion and Recommendations

Recommendations for impact management will for the most part be site specific and provided below. In the case of the four sites discussed below, excavation is recommended as the most desirable, and reliable form of mitigation from a heritage point of view and is probably the most cost efficient from the development view point.

9.1 Site Specific Recommendations

1. Site: DgQk 1 Hanna Creek

This site is the only one in which project design modifications might remove direct conflict. DgQk 1 is located on the terrace where construction of a work camp is scheduled to begin in 1988. If the work camp location were changed, and if no other construction activities were conducted here, this site would need no further conservation or mitigation work done. The site is downstream from the proposed dam site so would not be subjected to flooding.

If the work camp location is not changed, then this site should be excavated in such a way as to maximize data recovery. The site has been subjected to considerable disturbance and wind erosion in the past and the cultural material is badly mixed. Innovative data recovery techniques might be employed at this site. Backhoe excavation with the matrix being mechanically screened could be attempted. Earth moving equipment in conjunction with compressed air screening might be employed to mine the site. Any innovative data recovery techniques should only be attempted in conjunction with a small scale traditional technique excavation for control.

The value of this site is seen primarily as an opportunity to quantify the data to be used for typological purposes. Quality data is probably no longer available, but traditional controlled excavation should be done just in case.

The scheduling of the proposed project places this site in the most immediate danger of destruction. Information must be recovered before 1988. Analysis of recovered material might be difficult for this site until more stratified sites in the project area are excavated, but field work could probably be completed in thirty days with a crew of ten.

2. Site: DiQj 21 Pass Creek

This site is in a relatively undisturbed state where it has not been eroded by the Columbia River. This small, easily excavated site could probably be totally removed with a crew of five in two or three days. Extreme care should be taken here with particular attention being paid to the recovery of small flakes. If the projectile points recovered in evaluative testing are preforms then the preponderance of them should indicate this site is an important manufacturing area. If the points are a new type then every effort should be made to assure associations and dating ability are well controlled.

Inundation by the proposed reservoir will be the factor for mitigative work at DiQj 21. The reservoir can be expected to reach this site sometime after 1993.

3. Site: DhQj 1 Brilliant

This is the largest and most complex site in the entire project area. Conservation measures in the form of bank protection might be attempted at this site. The location of this large site so near the terrace edge and so close to a major confluence might render the required protection, cost prohibitive. Wayne Choquette (pers. com.) says terraces near confluences in the Libby Reservoir are subject to unpredictable water dynamics. Post-inundation studies done in the Arrow Lakes show heritage sites located near stream and river inlets have been subjected to alternating phases of sedimentation and downcutting (Mohs, 1977). Greatest destruction of inundated sites comes from three types of currents associated with river flow and reservoirs. These are vertical currents, horizontal currents and return currents. The latter two are the most destructive (Mohs, 1977) and would probably occur at the confluence of the Kootenay and Columbia Rivers.

The presence of burials near the terrace edge at this site is a factor that must be given very serious consideration. Any deleterious effects perceived or real with respect to burials could be an occasion for considerable adverse publicity.

In all likelihood the burials will have to be removed to be reintered at a place acceptable to the descendants of the Lakes Okanagan. Such removal should be done in such a manner so as to maximize data on Lakes morphology, pathology, perhaps demography and aspects of diet, wealth, trade, status, division of labour and any other indicators of social organization obtainable.

Apart from locating and removing the burials, archaeological excavations should be conducted over the entire site area. Certainly the entire site would not be excavated. Exact parameters could be determined and a 10% random sample should probably provide answers to problems of regional chronology. The data might generate new hypotheses that would require subsequent excavation in succeeding years. An on going program of excavation until inundation is not inconceivable at this site.

Project scheduling is such that this site would likely not be adversely effected until 1993. The sooner mitigation procedures are begun the more properly can Branch requirements be satisfied. All questions and problems might be sufficiently addressed in a single season, but if further problems arise, more work might be required at this site.

4. Site: DhQk 5 Ferry Slip

This small site beneath the hardpan layer could probably be totally removed by a crew of five in three or four days. Particular reference must be paid to the recovery of microblades. None were recovered in evaluative testing, but one microblade core might attest to their presence. Microblades and cores are diagnostic of fairly early occupation in the area. The early period is not well represented in the chronology of the area.

This site will also be subject to inundation by 1993 and data recovery would be extremely difficult after that time. Early excavation of this site might also assist in typological analysis of the Hanna Creek site which might also represent a fairly early period.

9.2 Discussion of Compensation

A policy of compensation implies recompense for something lost. The question posed by the proposed Murphy Creek Project is who is to be compensated for what lost?

Direct effects of the proposed project have been detailed and recommendations for mitigation through data recovery have been proposed.

Indirect effects might be compensated for if such effects can be documented or identified. An example of a compensation opportunity to be considered might be the detailed mapping of the Doukhobor settlements at Blagodatnie and Brilliant. For the most part these settlements lie above the 424 m level, but the proposed project would preclude them ever being restored to their previous maximum usage. A concise history of Doukhobor land use patterns in the proposed project area could serve as compensation for any perceived alterations of a former life-way.

Another form of compensation opportunity might address the enigmatic depression areas in the proposed Murphy Creek Project reservoir. The depressions recorded on Waldie's Island, the College Sites, Jordan Creek and Sullivan Creek have not yielded cultural material, nor have they been explained as definitely formed by natural agencies. A program of detailed mapping of these areas could serve as a record for the future and as compensation for their eventual loss through inundation.

Compensation for the loss of significant heritage resources in the proposed project area will be addressed if the program of data recovery through excavation is adopted as recommended.

10.0 General Recommendations

The four sites that have been shown through evaluative testing to meet varying criteria of significance have been specifically recommended for excavation as a mitigative procedure.

Compensation for direct loss or perceived loss of heritage values are recommended as a detailed mapping program of depression areas, and a detailed study of Doukhobor land use patterns and settlements.

Construction activities related to the Murphy Creek Project might reveal buried sites of archaeological or palaeontological significance. Monitoring of the borrow areas or other major land alteration activities especially with regards to sites DhQk 2 and DgQk 4 should be included in the schedule. The project area is not known to produce palaeontological material, but there is the possibility that early material could occur beneath later alluvial deposits.

When the borrow areas and bank protection areas are finalized, the Heritage Conservation Branch should be made aware of the work program. Monitering of these activities should serve to avoid conflicts.

Finally, all procedures for mitigation, conservation or compensation should be developed in close consultation with the Heritage Conservation Branch.

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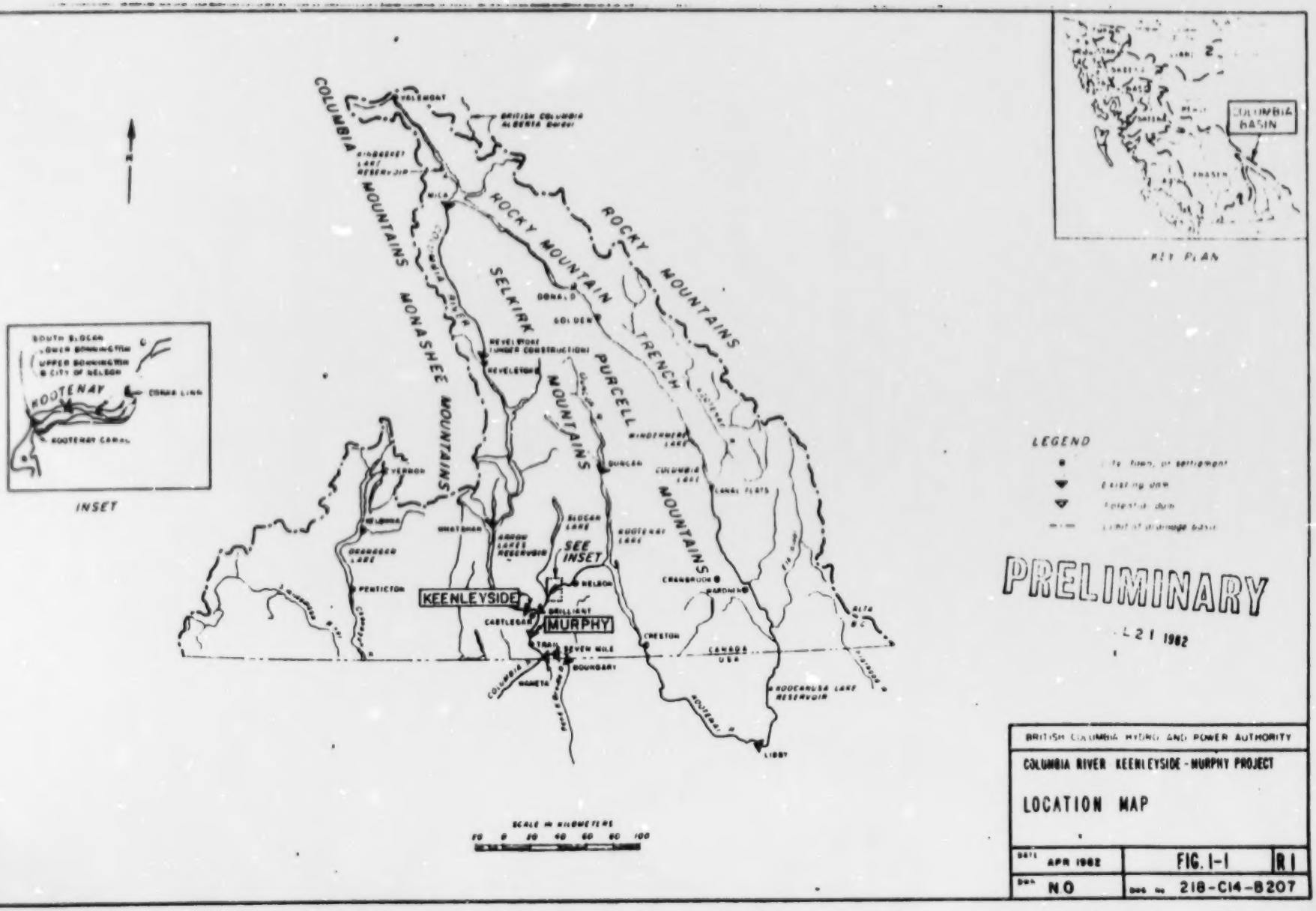
FIGURES AND TABLES


COLUMBIA MOUNTAINS
MONASHEE MOUNTAINS
SELKIRK MOUNTAINS
ROCKY MOUNTAIN TRENCH
ROCKY MOUNTAINS
PURCELL MOUNTAINS
KEENLEYSIDE
MURPHY
SEE INSET
KOOTENAY
INSET
KEY PLAN
COLUMBIA BASIN
LEGEND
PRELIMINARY
L 21 1982
SCALE IN KILOMETERS
50 0 20 40 60 80 100
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
COLUMBIA RIVER KEENLEYSIDE - MURPHY PROJECT
LOCATION MAP
DATE APR 1982
FIG. 1-1
R1
DWN NO
DWG No 218-C14-8207

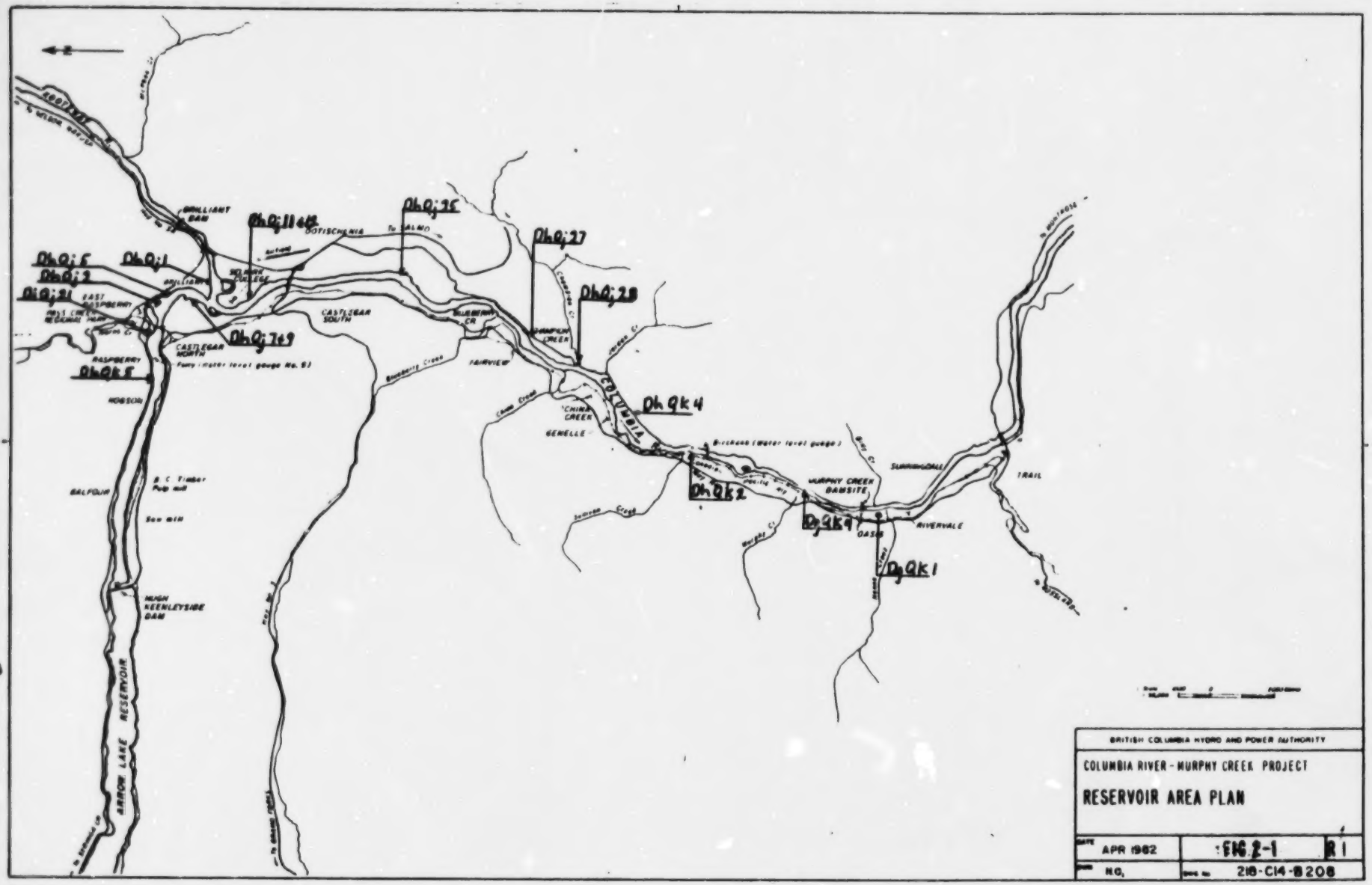
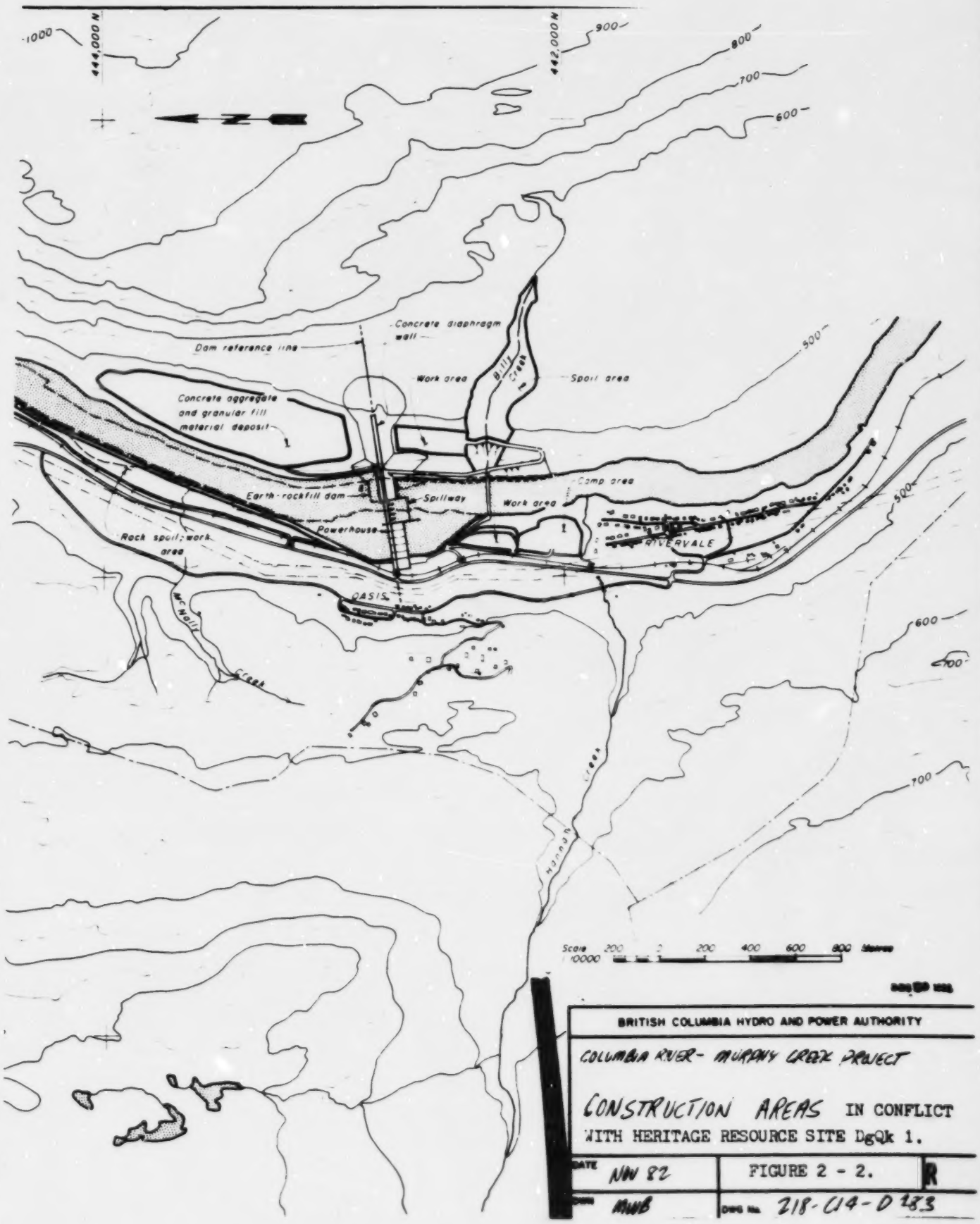


Figure 2-1. Heritage Sites Evaluated in the Reservoir Area (after B.C.Hydro,1982)



BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

COLUMBIA RIVER - MURPHY CREEK PROJECT

CONSTRUCTION AREAS IN CONFLICT WITH HERITAGE RESOURCE SITE DgQk 1.

DATE	NOV 82	FIGURE 2 - 2. R
	MMB	DWG No. 218-C14-D 183

Figure 5 - 1. Projectile Points (actual size) DiQj 21.

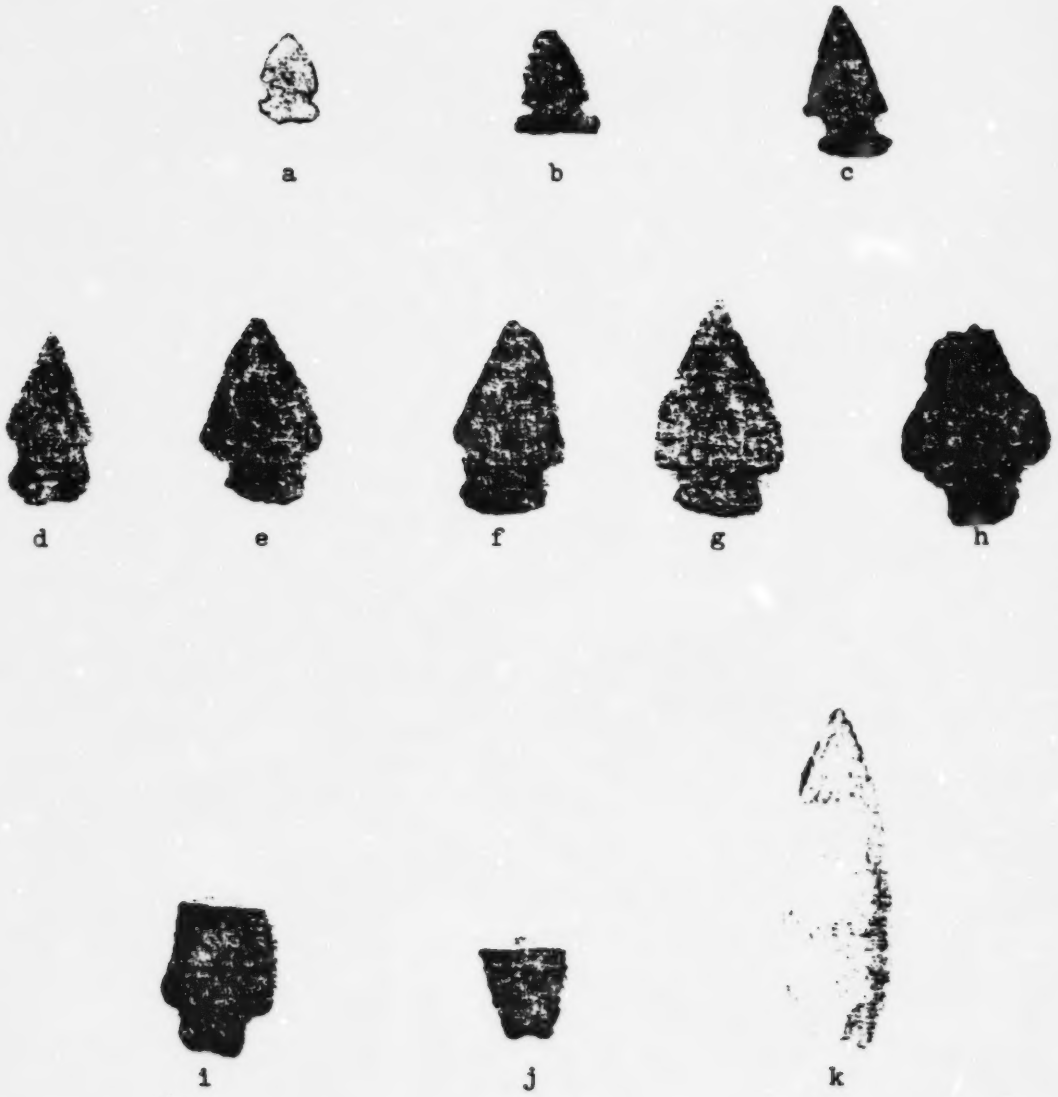


Figure 5 - 2. Projectile Points (actual size) DhQj 1.

Figure 5 - 3. Artifacts (actual size) DhQj 2.

Figure 5 - 4. Projectile Points (actual size) DhQk 5.

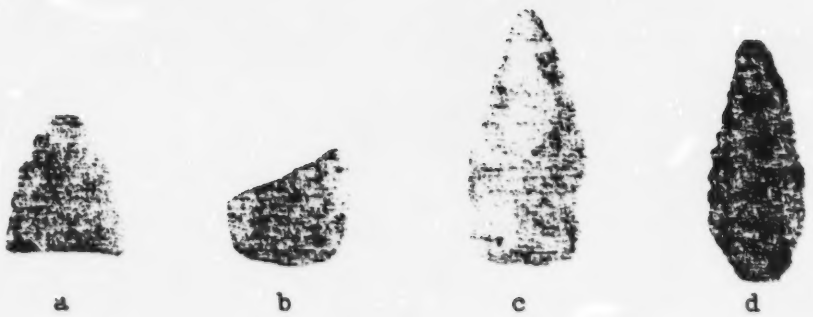


Figure 5 - 5. Projectile Points (actual size) DgQk 1.

Murphy Creek Project - Heritage Resource Evaluation 1982

Site: DgQk 1 Name: Hanna Creek

Area Tested: 230m N/S by 70m E/W Total Units: 91

DEPTH BELOW SURFACE (cm)	ARTIFACTS	FLAKES	BONE (gr)	OTHER
Surface	4	18	26.0	0
0-10	1	4	5.8	0
11-20	1	31	1.9	0
21-30	1	13	4.0	0
31-40	1	8	0	0
41-50	0	3	0	0
51-60	0	1	0	0
61 +	0	0	0	0
Totals	8	78	37.7	0

Table 5 - 1.

Murphy Creek Project - Heritage Resource Evaluation 1982

Site: DiQj 21 Name: Pass Creek

Area Tested: 15m N/S by 20m E/W Total Units: 36

DEPTH BELOW SURFACE (cm)	ARTIFACTS	FLAKES	BONE (gr)	OTHER
Surface	1	3	0	0
0-10	1	13	26.6	1 bolt, 2 bullet shells
11-20	2	2	0	0
21-30	2	57	4.0	0
31-40	1	10	0	0
41-50	1	0	0	0
51-60	0	0	0	0
61 +	0	0	0	0
Totals	8	85	30.6	3

Table 5 - 2.

Murphy Creek Project - Heritage Resource Evaluation 1982

Site: DhQj 1 Name: Brilliant

Area Tested: 70m N/S by 280m E/W Total Units: 257 includes 3 Backhoe trenches.

DEPTH BELOW SURFACE (cm)	ARTIFACTS	FLAKES	BONE (gr)	OTHER
Surface	0	2	0	0
0-10	0	19	3.9	1 nail, glass, metal ornament
11-20	0	39	21.2	5 nails, glass, 1 shell casing
21-30	3	14	8.8	glass
31-40	3	13	12.2	glass, metal
41-50	2	9	25.4	0
51-60	0	3	3.1	0
61-70	3	0	0	0
71-80	0	0	0	1 glass bead, 1 metal knife
81-100	4	44	0	6 glass beads, 1 leather object
101-150	3	32	154.6 Tr.A 23.4 Tr.B 22.3 Tr.C	6 nails, wood fragments 1 bone pendant
unknown	15	91	0	0
Totals	33	266	274.9	30

Table 5 - 3.

Murphy Creek Project - Heritage Resource Evaluation 1982

Site: DhQj 2 Name: Waldie's Island

Area Tested: 100m N/S by 105m E/W Total Units: 121

DEPTH BELOW SURFACE (cm)	ARTIFACTS	FLAKES	BONE (gr)	OTHER
Surface	2	0	0	8 pointed stick tips
0-10	0	0	121.4	5 pointed stick tips, 20 nails
11-20	0	1	0	15 nails
21-30	0	0	2 fish	0
31-40	3	4	2.0	0
41-50	0	0	0	0
51-60	1	2	1.6	0
61-80	1	0	0	0
Totals	7	7	125.9	48

Table 5 - 4.

Murphy Creek Project - Heritage Resource Evaluation 1982

Site: DhQj 27 Name: Blagodatnie

Area Tested: 60m N/S by 60m E/W Total Units: 44

DEPTH BELOW SURFACE (cm)	ARTIFACTS	FLAKES	BONE (gr)	OTHER
Surface	0	0	0	0
0-10	0	3	0	0
11-20	0	4	0	0
21-30	0	2	0	0
31-60 +	0	0	0	0
Totals	0	9	0	0

Table 5 - 5.

Murphy Creek Project - Heritage Resource Evaluation 1982

Site: DhQk 5 Name: Old Ferry Slip

Area Tested: 20m N/S by 70m E/W Total Units: 18 50cm by 50cm

DEPTH BELOW SURFACE (cm)	ARTIFACTS	FLAKES	BONE (gr)	OTHER
Surface	0	1	0	nails, glass,
0-10	0	2	2.1	metal frags,
11-20	0	0	1.0	spikes, bolts.
21-30	1	0	0	0
31-40	2	3	20.3	0
41-50	1	0	0	0
51-60	0	0	0	0
61 +	0	0	0	0
Totals	4	6	23.4	20

Table 5 - 6.

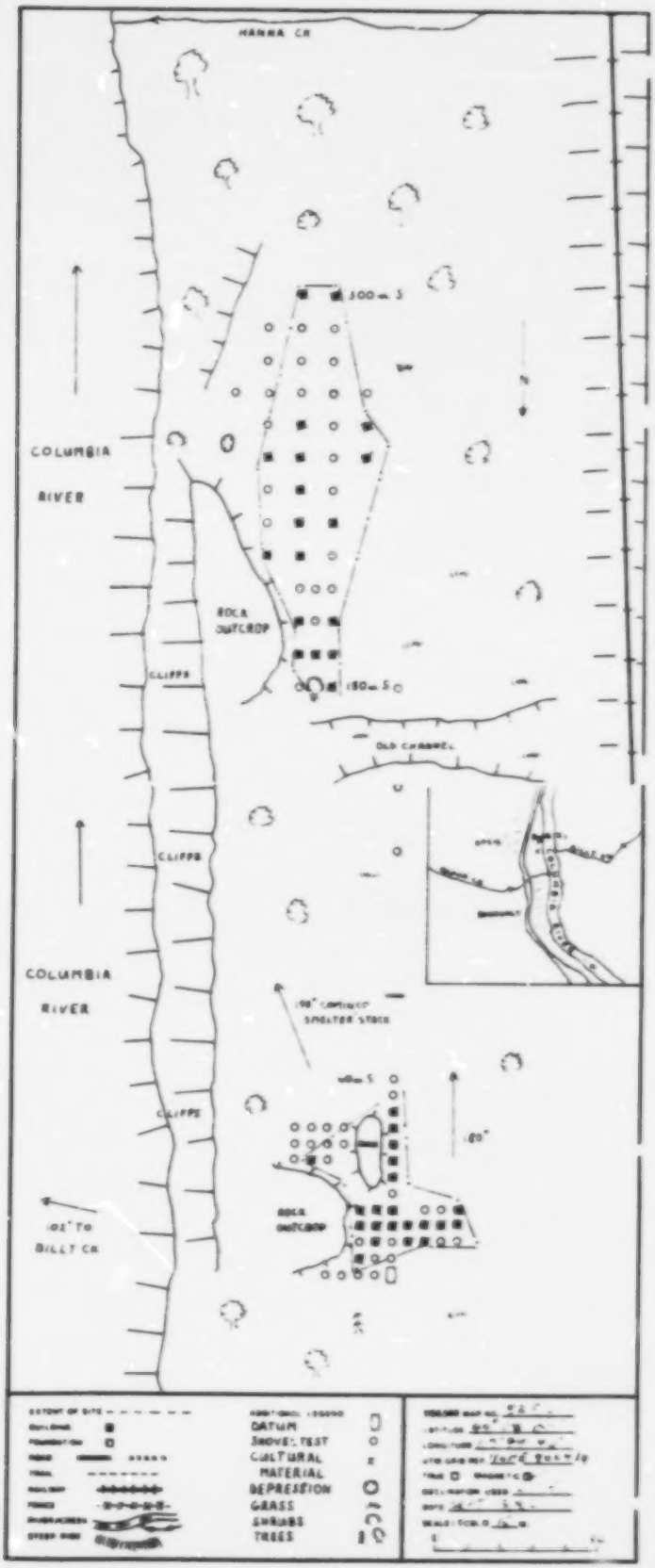
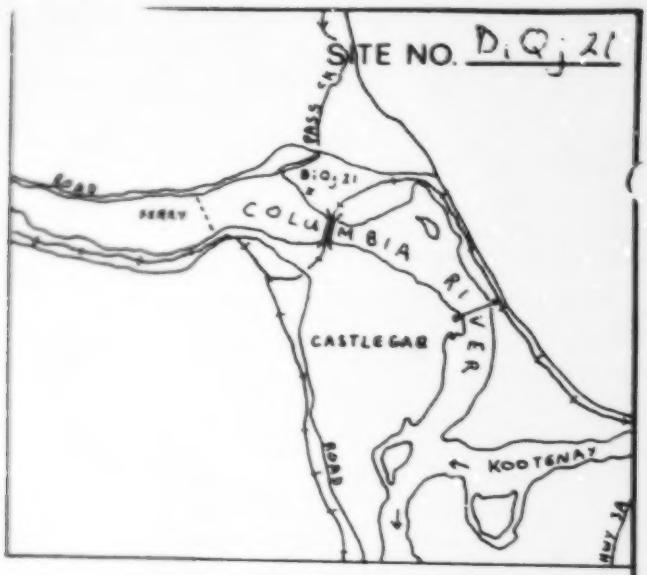

HANNA CR
COLUMBIA
RIVER
ROCK
OUTCROP
CLIFFS
OLD CHANNEL
COLUMBIA
RIVER
CLIFFS
SMELTER STACK
ROCK
OUTCROP
TO
BILLT CR
DATUM
SHOVEL TEST
CULTURAL
MATERIAL
DEPRESSION
GRASS
SHRUBS
TREES

FIGURE 6 -. 1

SITE NO. DiQj 21



N

300 METRES TO PASS CR.

DATUM

242° TO WEST SIDE OF ROBSON FERRY RAMP

300 METRES TO ACCESS RD.

COLUMBIA RIVER

145° TO CENTRE ABUTMENT OF RAILWAY BRIDGE

EXTENT OF SITE
BUILDING
FOUNDATION
ROAD
TRAIL
RAILWAY
FENCE
RIVER/CREEK
STEEP RISE

ADDITIONAL LEGEND
EXCAVATION UNITS
SHOVELTESTS
CULTURAL MATERIAL
FENCE
GRASS
SHRUB
BEACH

FIGURE 6 - 2

1:50,000 MAP NO. 82 F/5
LATITUDE 49° 20' 02"
LONGITUDE 117° 39' 50"
UTM GRID REF. [redacted] (5477645)
TRUE ☐ MAGNETIC ☑
DECLINATION USED 21° E
DATE [redacted] JULY 27/82
SCALE: 1 CM. = 5 M.
0 25

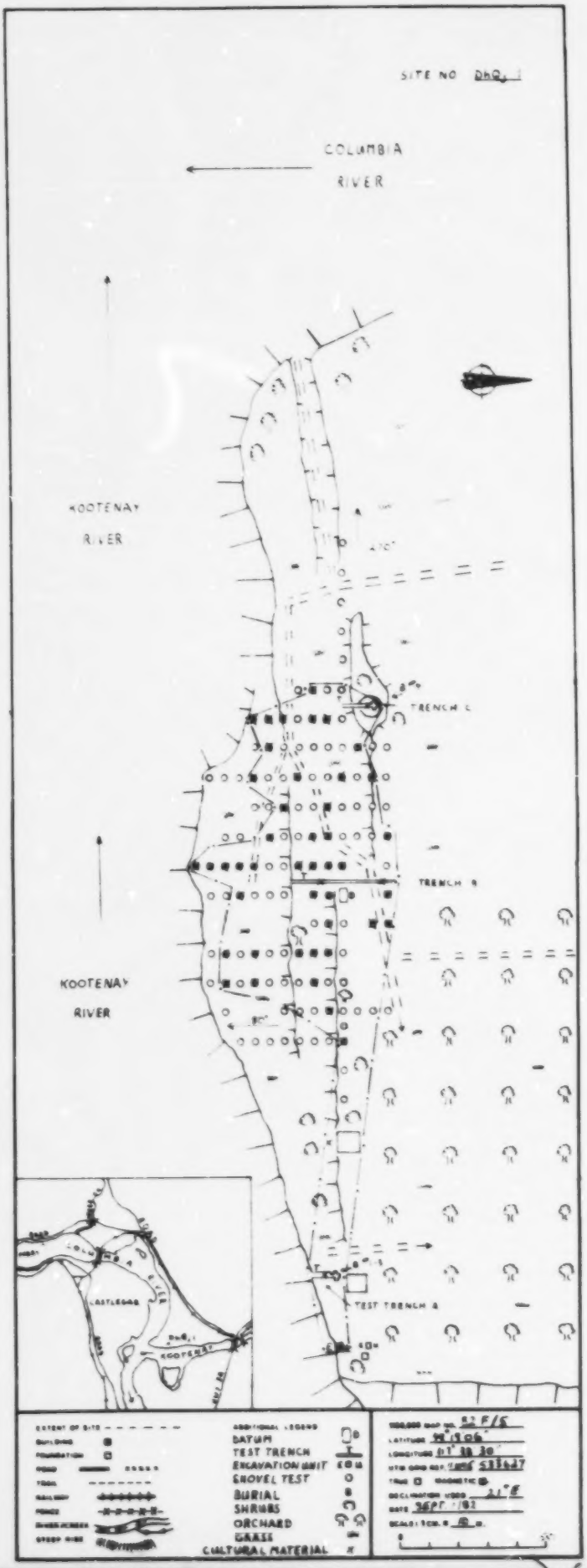

SITE NO DhQ 1
COLUMBIA
RIVER
KOOTENAY
RIVER
KOOTENAY
RIVER
TRENCH C
TRENCH A
TEST TRENCH B
DATUM
TEST TRENCH
EXCAVATION UNIT
GRAVEL TEST
BURIAL
SHRUBS
ORCHARD
GRASS
CULTURAL MATERIAL

FIGURE 6 - 3

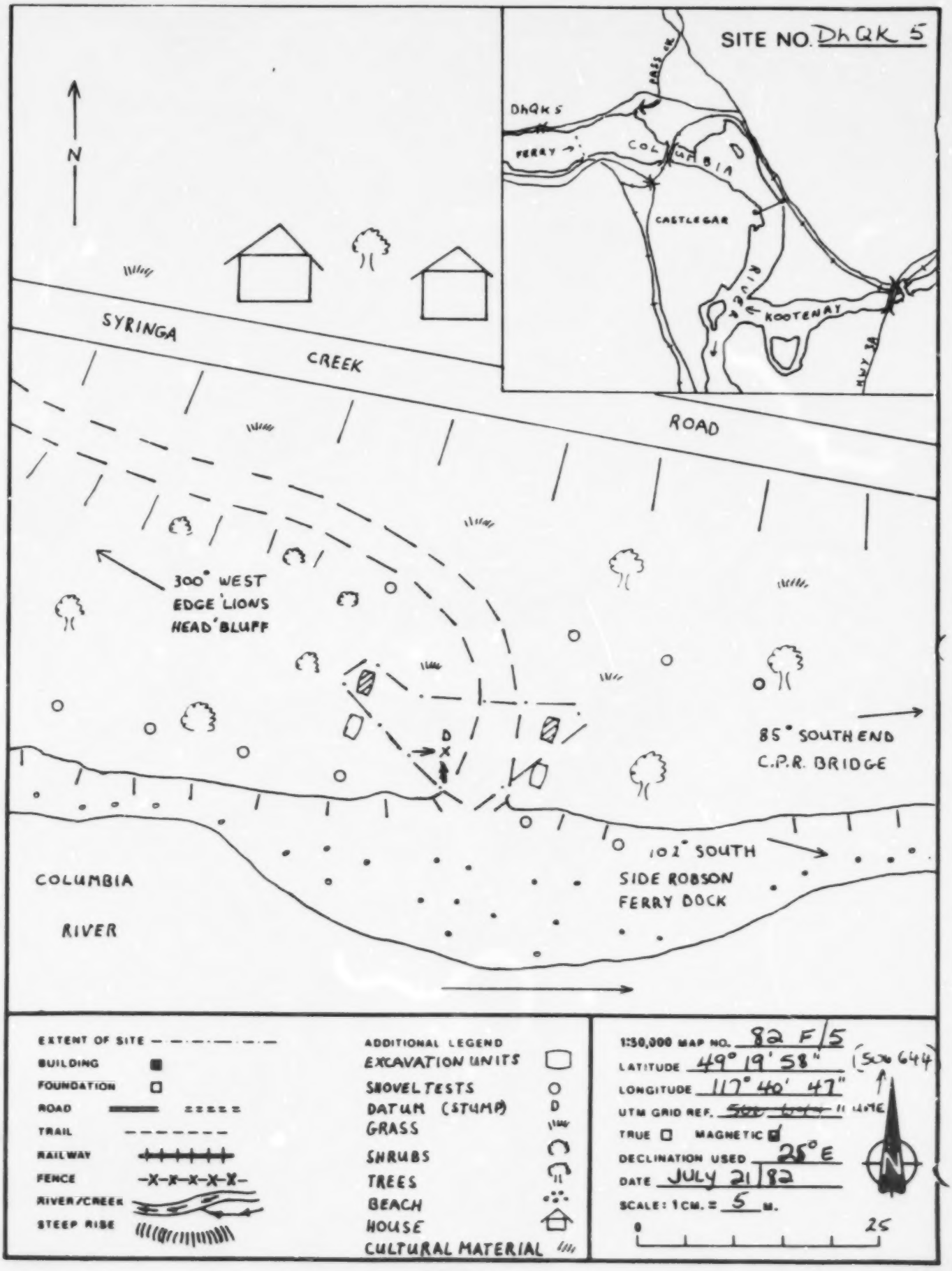

SITE NO. DhQK 5
DhQK 5
FERRY
COLUMBIA
CASTLEGAR
KOOTENAY
N
SYRINGA CREEK ROAD
300° WEST EDGE LIONS HEAD BLUFF
85° SOUTH END C.P.R. BRIDGE
102° SOUTH SIDE ROBSON FERRY DOCK
COLUMBIA RIVER
EXTENT OF SITE
BUILDING
FOUNDATION
ROAD
TRAIL
RAILWAY
FENCE
RIVER/CREEK
STEEP RISE
ADDITIONAL LEGEND
EXCAVATION UNITS
SHOVEL TESTS
DATUM (STUMP)
GRASS
SHRUBS
TREES
BEACH
HOUSE
CULTURAL MATERIAL
1:50,000 MAP NO. 82 F/5
LATITUDE 49° 19' 58"
LONGITUDE 117° 40' 47"
UTM GRID REF.
TRUE MAGNETIC
DECLINATION USED 25° E
DATE JULY 21/82
SCALE: 1 CM. = 5 M.
0
25

FIGURE 6 - 4

B.C. HYDRO

MURPHY CREEK PROJECT HERITAGE RESOURCE

DETAILED IMPACT ASSESSMENT

ADDENDUM

RESPONSE TO COMMENTS OF THE HERITAGE CONSERVATION BRANCH DATED 6 JANUARY 1984 ON THE FINAL DRAFT REPORT

July 1984

Comment (a) The initial heritage work done for this project in 1980 recorded some 39 heritage sites (Baker 1981). The 1982 work was oriented towards only those sites which fell below the 424 meter elevation line (i.e., were threatened by inundation) or were threatened by slope failure. The remaining sites were considered to be "safe" from impact. This point is fairly well brought out in the sections on Inventory (4.1); Site Evaluation (4.2); and Significance Criteria (4.3). Based on site determination work, one site on Zuckerberg Island, DhQj 22, was not clearly identified as having been located above the 424 m elevation. A clear statement of the relative position of that site with reference to potential impacts would be very beneficial.

Response (a) Site DhQj 22 on Zuckerberg Island is located at El. 426.94 m (measured at the bottom of the lowest depression) according to a February 1984 survey undertaken by B.C. Hydro. This site is, therefore, safe from inundation. No potential for bank regression has been identified in this area.

In recent studies associated with the Zuckerberg Island Historical Restoration Project, Apel (personal conversation) identified 13 depressional features which he suggests are cultural in nature. All these features would be below the normal reservoir operating level (El. 424 m). These features have been examined by B.C. Hydro's engineers and it is their opinion that the depressions have been caused by river erosion associated with back eddies and flow amalgamation at the Kootenay/Columbia confluence. This conclusion is supported by the observation that in April 1984 a new depressional feature was being formed at the rivers edge. Further, the existing features are located below the pre-Columbia River Treaty regulation average annual flood level. The size of river armouring above these features suggests that they were formed during recession of a large flood as they are not infilled by cobbles.

Comment (b) There is some confusion in the report as to whether 15 or 16 sites were under study. The general text refers continually to 15 sites, while the site descriptions indicate 16 sites were worked on.

Response (b) Sixteen sites were studied including DhQj 5 (Robinson Burial).

Comment (c) The interpretive discussion of the depressions at Waldie's Island (DhQj 2) leaves that site in a somewhat equivocal position with respect to its cultural status. The lack of explanation for natural causes for the depressions, coupled with the knowledge that the depressions physiologically fall within the range of variation of proven "house-pit" sizes and shapes, along with the presence of cultural material located on the southwest side of the island suggest indeed those depressions are cultural, and likely prehistoric.

The suggestion (p. 6-2) that annual spring flooding of the island would preclude habitation is weak argument for two reasons.

Firstly, it has not been demonstrated that the island flooded every year, and secondly, it is likely the dwellings were only inhabited during the winter months when the water level in the river was at its lowest.

The lack of cultural material located within the test units in and around the depressions tend to enhance the significance of this site, not reduce it. A point also adding to the significance of the Waldie's island site is its physiographic setting. DhQj 2, along with the two similar sites on Zuckerberg Island, DhQj 21 and 22, are relatively unique in that few possible "pit-house" village sites are known to be located on islands. The reasons behind the selection of island locations by the prehistoric peoples who inhabited those sites is a pertinent research question which could be added to the list of Research goals mentioned in Section 8.2 (p. 8-2).

Response (c) Simonsen (1984) has examined the field notes prepared by Baker during archaeological test excavations conducted in 1982. A copy of Simonsen's analysis entitled "Report on the results of archaeological test excavations at Waldie's Island (site DhQj2) Castlegar, B.C." is appended. His conclusion is that the island was definitely utilized during both the prehistoric and historic periods.

Under pre-Columbia River regulation conditions, B.C. Hydro estimates that all of the depressions were subject to flooding by the one in 15-year flood. With the Murphy Project none of the depressions would be affected by the reservoir and only eight of the depressions would be affected by the one in 200-year flood.

B.C. Hydro accepts both recommendations of Simonsen's report. A detailed contour map of the island has been produced (recommendation No. 1) and is appended. The post-inundation monitoring recommended (No. 2) will be included in item 5.1.4 No. 3 of the Mitigation Compensation and Enhancement Plan.

Comment (d) The Branch has some reservations regarding the significance attached to the Hanna Creek site, DqQk 1. The description of this site notes its virtually total disturbed state. If undisturbed deposits were not encountered in 91 test units, they are not likely to be present. Given the large number of test units and the fact that the entire surface of that site is exposed, the artifact recovery does not suggest a dense concentration is represent (8 tools and 78 flakes).

The Branch supports Hydro's proposed recommendation to "cover" this site during the construction of the camp facilities (Hydro, September 1983). The potential significance of the Waldie's Island site DhQj 2 has been under-evaluated in relation to the significance criteria attributed to the Hanna Creek Site DqQk 1.

Response (d) B.C. Hydro acknowledges the Branch's support of our recommendation on the Hanna Creek site DqQk 1. See previous response regarding the Waldie's Island DhQj site.

REPORT ON THE RESULTS OF ARCHAEOLOGICAL TEST EXCAVATIONS AT WALDIE'S ISLAND (SITE DhQj2) CASTLEGAR, B.C.

13 July 1984

Prepared for B.C. Hydro
Environmental and Socio-economic Services

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Heritage Consultants

REPORT ON THE RESULTS OF ARCHAEOLOGICAL TEST EXCAVATIONS
AT WALDIE'S ISLAND (SITE DhQj2) CASTLEGAR, B.C.

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1.0 INTRODUCTION

This report attempts to outline the scope and results of archaeological test excavations carried out at the Waldie's Island archaeological site (DhQj2), during the month of August 1982. The data utilized in this analysis consists of 12 pages of hand-written field notes provided by the project director of the Murphy Creek Generation Project, Heritage Impact Assessment Study, Mr. James Baker of Okanagan College, Kelowna.

At the outset, it must be noted that this analysis and report includes data only from "shovel tests" carried out at Waldie's Island. The report does not include any analysis of the results of extensive "systematic test excavations" which were carried out subsequent to shovel testing, as the archaeological impact assessment project director (Baker) has not made field notes available for this aspect of the project.

Lastly, controversy has existed over the questions of whether or not the numerous surface depression features at Waldie's Island are culturally derived or are natural, and whether the island should be considered an archaeological site at all. This report concludes that the island is definitely an archaeological site (based on the results of "shovel test" excavations), but the question of the origin and function of surface depressions on the island remains unresolved.

2.0 SITE LOCATION AND DESCRIPTION

Waldie's Island is located in the Columbia River, directly east of the town of Castlegar. The island is approximately 200 m (north-south) by 100 m (east-west) in size with a pronounced sandbar (spit) at its northern end. The northern one-half of the island presently supports stands of pine, cottonwood and thick underbrush of unknown species. The southern one-half supports primarily thick underbrush of unknown species, as well as a few mature cottonwood trees.

The island was first recorded as an archaeological site in the summer of 1980, by James Baker while conducting the first phase of a heritage resources impact assessment study in conjunction with B.C. Hydro's Murphy Creek Project. The basis for recording the island as an archaeological site was the presence of numerous surface depressions, similar to depressions at other sites known to have been utilized as winter dwellings by prehistoric native Indians in the study area.

As no specific cultural remains (e.g. artifacts, hearths, faunal remains, etc.) were discovered on the surface of the island, the consultant was requested to carry out sub-surface testing during the summer of 1982. The test-excavation programme was quite extensive and included both shovel testing at 10 m intervals along east-west and north-south transects, as well as more systematic trench excavations within the actual depression features. The final report of the Murphy Creek Archaeological Impact Assessment Project concluded that Waldie's Island contained no significant archaeological deposits and that the surface depression features had been created by natural forces.

3.0 SCOPE AND NATURE OF SHOVEL TEST PROGRAMME

According to the field notes of the shovel test programme, testing began on 6 August and concluded on 11 August 1982. The notes are not clear, however, about the actual number of days which were spent on the testing programme.

There is also confusion regarding the actual number of shovel test units that were excavated. In a Progress Report to B.C. Hydro dated 18 August 1982, Baker indicates a total of 48 "test units" were completed. However, the field notes from the project lists approximately 70 units as being tested. The latter number is accepted for the purposes of this report. All shovel test units were 50 x 50 cm in diameter and each was taken down to a maximum depth of 70 cm.

A sketch map of Waldie's Island was drawn for the purpose of the shovel test programme and a photocopy is included with this report. As indicated on this map, the test units were excavated along north-south and east-west baselines. The field notes record the location of each test unit in relation to distance away from a specific point along the baselines. For example, a unit was excavated at a point identified as 4-5E/50-51S (between 4 to 5 m east and between 50 to 51 m south). Unfortunately, neither the sketch map nor the notes provides a clear description of how the point identification system works, making an analysis of the results somewhat difficult.

4.0 RESULTS OF SHOVEL TESTING PROGRAMME

Of the approximately 70 test units which formed the shovel test programme at Waldie's Island, 11 contained items of cultural origin. These are described as follows:

(a) Stone Artifacts

Consisting of worked stone material, these include points (possibly arrowheads) point fragments, flakes resulting from tool manufacture, stone cutting implements (knives) and edge battered cobbles. A total of 13 items in this category were found from a total of five test units.

(b) Burnt Bone

Small quantities of burnt bone material was found in two separate test units.

(c) Wood Objects

These include three historic items (two plank fragments) and one fence post) as well as a number of "pointed sticks" of unknown origin.

It must be noted that the above list is based on the field notes without benefit of further analysis. Undoubtedly, a number of the items in the "Stone Artifact" category would be rejected as culturally derived upon close examination.

In addition to the above listed items, most of the units excavated were shown to have considerable quantities of charcoal and many had fire-cracked rocks associated with them as well. Another interesting observation which can be made from an analysis of the field notes is that almost all cultural materials were found at a depth of from 40 cm from the ground surface to 70 cm. This might imply a considerable antiquity for the site (say in the order of 1000 to 2000 years), however, as the island has been subject to flooding in the past, it is not known at what depth the original occupied surface occurs.

5.0 CONCLUSIONS

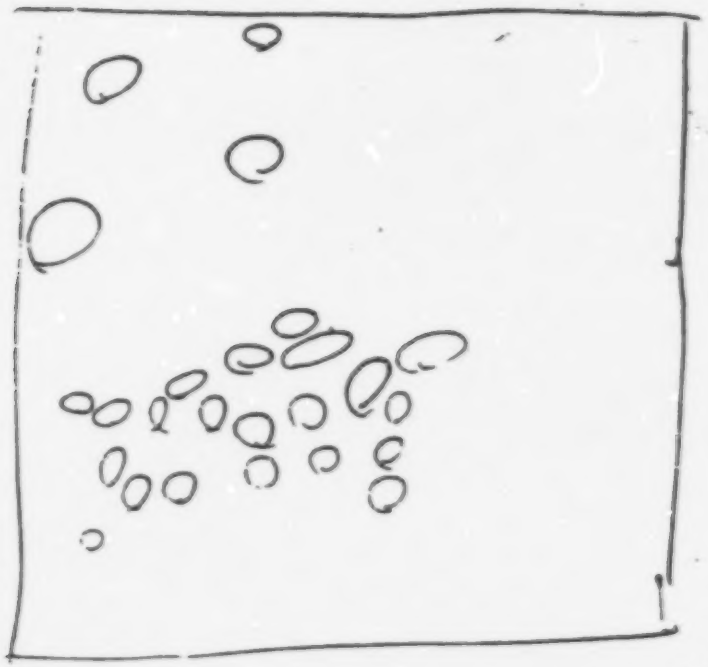
On the basis of an analysis of field notes from shovel testing operations at Waldie's Island, it can be concluded that the island was definitely utilized during both the prehistoric and historic periods. The presence of quantities of charcoal and fire-cracked rock below the present surface of the ground, might suggest that prehistoric use of the island was related to food processing activities. This might also explain the presence of the numerous depressions on the island as these features may represent cooking or roasting pits. Similar food processing pits are known to occur elsewhere in the southern interior region of the province and ethnographic accounts from the study area indicates that such features were in use into the historic period.

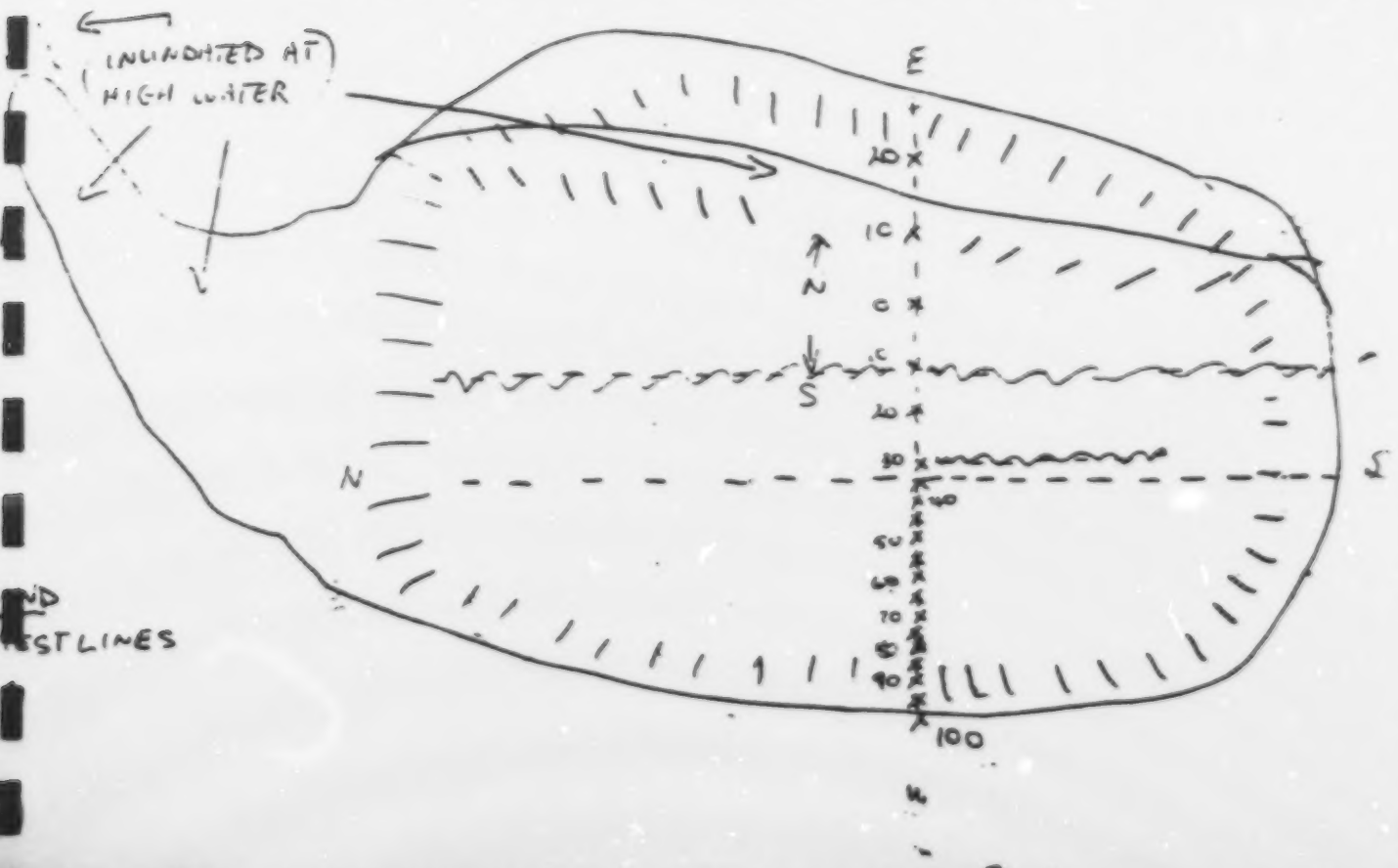
6.0 RECOMMENDATIONS

1. It is suggested that B.C. Hydro produce detailed contour mapping of Waldie's Island indicating all depression features and location of previous archaeological test excavation.

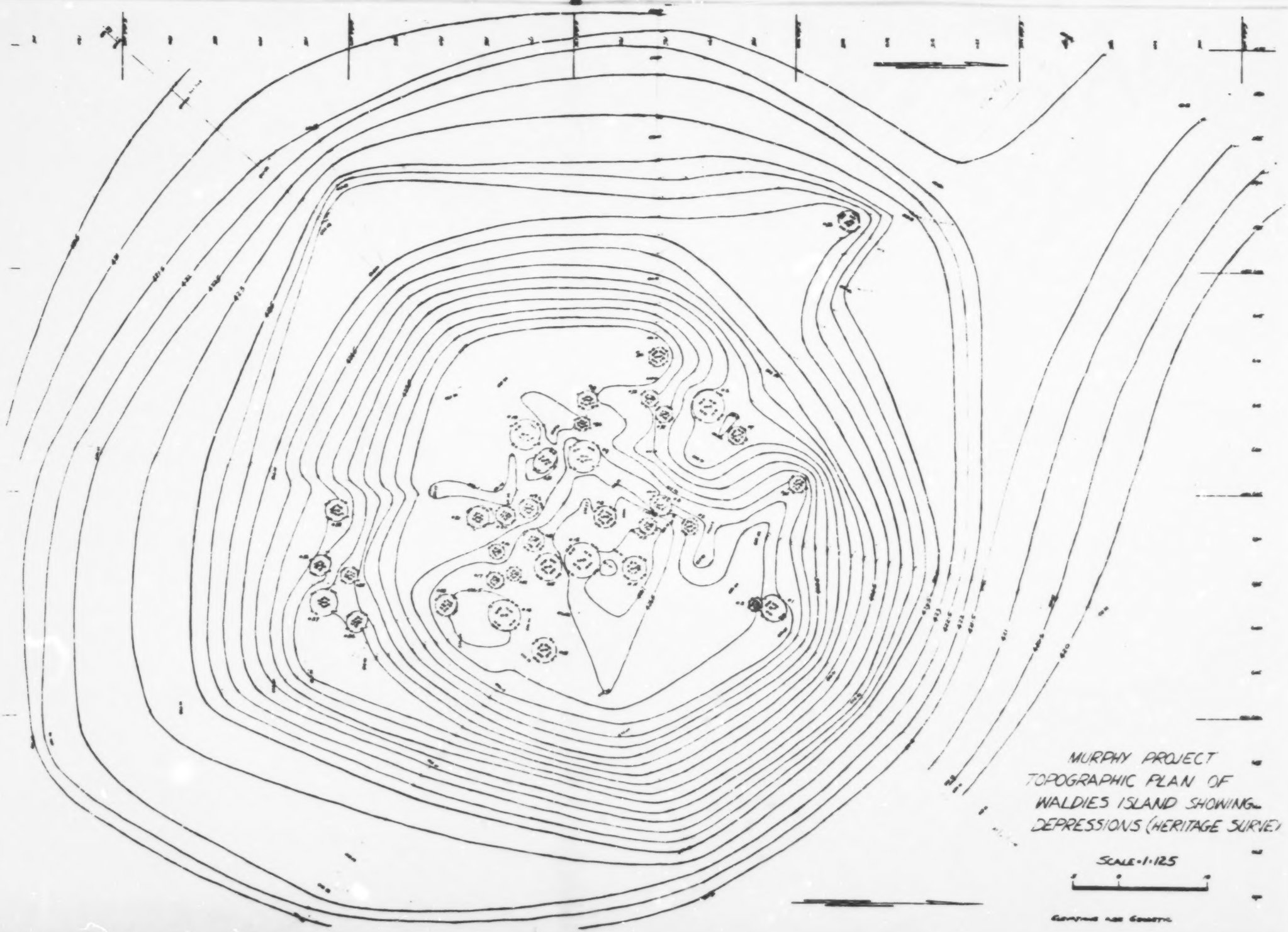
2. It is suggested that the site be monitored annually for 3 years following inundation.

SKETCH MAP SHOWING
SHOVEL TESTING SCHEME
FROM WALLIE'S ISLAND





ND
ESTLINES



MURPHY PROJECT
TOPOGRAPHIC PLAN OF
WALDIES ISLAND SHOWING
DEPRESSIONS (HERITAGE SURVEY)

SCALE 1:125

POOR

QUALITY

ORIGINAL